III-55

ANNUAL REPORT

OF THE

DIRECTOR OF AGRICULTURE,

BOMBAY PRESIDENCY

FOR THE YEAR 1885-86.

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No. 2435 of 1886.

From

E. C. OZANNE, Esq.,
Director of Agriculture,
Bombay;

To

The SECRETARY to GOVERNMENT,
Revenue Department,
Bombay.

Poona, 1st November 1886.

Sir,

This is the Third Annual Report of the Agricultural Department. I have in an appendix (A.) shown how far I have been able to travel during the year. I was absent nearly six months from head-quarters. A considerable portion of my time was taken up by the Forest Commission, of which I am a member. My duties as such left the Circle Inspectors of Bijápur and Dhárwár insufficiently supervised, and it was not till the 1st July that assistance, as will be detailed further on, was vouchsafed to me.

2. My head-quarter establishment has, owing to gradual development of work, undergone redistribution. It now consists of 2 Superintendents in charge of agricultural and statistical branches respectively, and 18 Clerks. The cost is Rs. 820 per mensem as against Rs. 662 at the time of my last report. The Head Clerk of the late Gazetteer establishment on Rs. 125 is in addition temporarily attached to the office on special duty to compile analytical district accounts required by the Famine Code. The Survey Instructor, on the other hand, has, since Mr. Price's transfer to my department, been abolished. The sanctioned sum for 2 Survey Instructors (Rs. 80) has been utilized to provide an office for Mr. Price.

My Assistant Ráo Bahádur Bhimbhái Kirpárám has worked with his well-proved energy and ability, with hardly a day's absence in the whole year. He has been heartily assisted by the two Superintendents, Mr. Vaikunthrám Manmathrám Mehta and Mr. Itchárám Bhagvándás, both graduates, and both trained by Mr. Bhimbhái under Mr. James Campbell, Compiler of the Gazetteer.

I.—ORGANIZATION AND MAINTENANCE OF VILLAGE RECORDS.

3. Under this head come

A.—The maintenance of the record of the Revenue Survey after the introduction of the Revision Settlement, and its correction.

B.—The registration and compilation of agricultural statistics

(*a*) for settlement purposes,

(*b*) for general purposes of administration

and

(*c*) for use in times of distress and famine.

4. The survey record is entrusted to the Agricultural Department as soon as the revised measurement and classification by the Revenue Survey Department are completed. Though so far the district staff of the former department has been only introduced on the final departure of the survey, it is an essential feature in the sanctioned programme that such a staff in the interests of improved statistics and to strengthen the ordinary revenue establishments should be introduced as early as possible throughout the Presidency. Financial pressure has been the only bar to such extension. In the event of the formation of the special staff supervised by the Agricultural Department, in other than finally measured and classified districts, the survey element will be absent, though full provision for its addition has been made to take effect immediately on the transfer of the survey records.

5. The scheme contemplates the formation of a táluka staff of inspecting officers under the Mámlatdár, to test the work of the village officers, and a head-quarter district staff under the Director of Agriculture, to supervise the táluka Inspectors. The revenue work of the Inspectors is thus supervised by one department, and the technical work, including the improvement of village agricultural and economic statistics, by another department. There is thus a dual control, the inevitable disadvantages of which can only be reduced to a minimum by the harmonious and hearty co-operation of the Agricultural with the Revenue Department proper. The staff has been as yet introduced into only two districts. There has been no extension during the year under report.

6. I noticed last year (para. 22) the great desirability of the utilization of the superior officers of the Survey Department, as they can be spared in the course of the gradual contraction of the operations of that department, in the capacity of Assistants to the Director of Agriculture in charge of the records and work of two districts, in lieu of following the specific recommendation of the Famine Commission that the district staff should be placed under a Revenue officer of the rank of Deputy Collector.

Owing to the increased calls on my own time, one special reason for which was my appointment as member of the Forest Commission, I made a special representation to Government in November last. This representation was cordially supported by the Survey and Settlement Commissioner, and was responded to by the transfer of one of the best and most experienced of the Assistant Superintendents of Survey, Mr. W. S. Price, to be in charge of the Survey Record of Bijápur and Dhárwár. The transfer was fixed for the 1st April, but owing to pressure of settlement work Mr. Price, being the Assistant Settlement Officer for the Southern Marátha Survey, could not be spared till the 1st July, when he was placed under my orders. The delay was very prejudicial to the special interests of the work of my department. The district staff and the táluka Inspectors were left insufficiently supervised, and the work necessarily languished. The Revenue officials in charge of tálukás and divisions of the districts, owing to frequent transfers, greatly needed the continuous assistance of the stationary staff of the Agricultural Department, especially in the infancy of the scheme, when the precise responsibility of the officers of the two controlling departments had not become fully defined and understood. I fully acknowledge the cordial support which I have received from the Collectors. But the fact remains that the work done by the Inspectors and the district agricultural staff was far from satisfactory. It could not be otherwise. But, on the other hand, the delay in Mr. Price's transfer was compensated for by the due completion of the important work on which he was engaged,—which resulted in an earlier completion of the settlement of a portion of the Belgaum District and thus the timely introduction of the revised rates.

7. I have referred to the cordial support received from Mr. Stewart in the matter of the transfer of one of his best officers, and I desire to place on record here the arguments adduced by Mr. Stewart, which fully corroborate those which I put forward, and give succinctly the important duties devolving on the Agricultural Department in the maintenance of the Survey Record :—

> The duties which, according to the latest development of the Government programme, devolve on the Director of Agriculture, are considerably in excess of those which were contemplated when that officer was first appointed, and which were arranged under seven different heads in Government Resolution No. 4576 of 16th June 1883. Owing to the decision of Government to disband gradually the special establishments now entertained for the field operations of survey and land valuation, and to maintain in future a permanent establishment under the Director of Agriculture to record from time to time all necessary changes in the survey record and maps, the entire survey and settlement papers of two districts in which field operations have been completed have been made over to the Director, and he is required not only to 'organize and maintain the village records,' but he is entrusted with the duty of keeping survey maps corrected up to date, altering *ákárbands* and settlement registers as necessity for alteration arises, and maintaining those papers upon which the revised rates will be ultimately fixed. As time goes on, other districts will be entrusted to him in the same way, until finally the present Survey and Settlement Department will be merged into the permanent establishment which it is proposed to entertain, and to which a variety of duties are to be entrusted, of which those connected with revision of settlement will only form a part In the Dhárwár and Bijápur Districts the Director has already been provided with a strong establishment of Circle Inspectors, but he now feels the need of superior assist-

ance in the matter of supervision, and having his hands full of miscellaneous duties finds that he cannot devote the necessary time and attention to the details of the most absorbing and most important of all the duties which have yet been assigned to him. Mr. Ozanne's request for aid appears to me very reasonable. It was contemplated by the Famine Commission that an officer of the rank of a Deputy Collector should be assigned to each district, and one survey officer for two large districts is certainly not more than will be requisite for the proper carrying out of the scheme. It is, of course, very inconvenient for me as Survey and Settlement Commissioner to spare an Assistant Superintendent of Survey at a time when there is great pressure of work, and a difficult programme is to be carried out for the completion of which I feel myself personally responsible, but none but a survey officer would be useful to Mr. Ozanne at the present juncture, and it is, therefore, absolutely necessary that some sacrifice should be made to help him. (Mr. Stewart's letter to Government, No. 2239, dated 30th November 1885, para. 2.)

8. The duties of the Circle Inspectors were shown in detail in the last Report (para. 17). The provisional Rules for their guidance have now been finally revised, and sanctioned by Government. In them the results of the revision of the Manual of Revenue Accounts have been incorporated, and considerable modifications in the distribution of the Circle Inspectors' time among the various duties assigned have been made. The most important of these should be noted.

1. The division of duties between the regular staff of the Mámlatdár and the Inspectors has been made more precise, in order to check the tendency that had already shown itself so strongly of the Mámlatdárs to stifle all progress by utilizing the Inspectors on miscellaneous enquiries.

2. The annual inspections of boundary marks, crops and waste land instead of being separately made, a plan which caused much loss of time in travelling, will be made contemporaneously in the four months ending with the close of February.

3. By this means the interval between that time and the rains will be devoted specially to a complete inspection of the marks of every field, in order to bring the map up to date.

4. In June the Circle Inspectors at the táluka office will compile under the direction and supervision of the Mámlatdár the agricultural returns of the táluka, so that they may be shown in my Annual Report.

5. In July and August the census recorded by the village officers yearly in June will be checked, and the corrected figures will be available for the General Administration Report of the Presidency and for transmission to the Secretary of State.

6. In September the compilation of the census returns at the táluka head-quarters will be made by the Circle Inspectors.

7. In October, miscellaneous work will be prosecuted. This will chiefly consist in the disposal of cases of dispute and the like, which have not been disposed of in the travelling season.

Thus the time of the Inspectors is fully occupied. It stands to reason that if diversion from set duties were not promptly checked, the regularity and value of the work would be seriously impaired.

9. I regret that in Dhárwár the reduction of one Mámlatdár's] Kárkún in each táluka has necessitated a temporary addition to the duties of the Inspectors. Application for the restoration of the reduced hand was made by the Collector and supported by the Commissioner and myself. Financial pressure came in the way, and thus an infringement of the principles on which the staff was organized has arisen.

10. The charge of each Circle Inspector varies with the density of population, physical features and the number of separate villages, as the following table will show :—

Districts.	Number of Circle Inspectors.	Average Monthly Pay.	Average Charge.			
			Area in Square Miles.	Population.	Number of Villages.	Cultivated Area in Acres.
Dhárwár	40	30	116	22,638	33	48,535
Bijápur	39	30	114	15,962	25	57,067

Full figures are not available to show the exact extent of the inspection and test carried out during the year. Suitable forms have been prescribed in the new Rules, which will supply the required information. I made a rapid tour in Bijápur in January, and, as far as I could judge, the Inspectors were doing their work honestly and well, though the people are not yet reconciled to the work of the new staff, and show little co-operation.

A.—Survey Work.

11. I have, however, full figures to show the amount of survey work performed by the Circle Inspectors :—

No.	Classes of Cases.	Dhárwár.				Bijápur.			
		Arrears on 30th September 1885.	New Cases.	Disposed of.	Arrears on 30th September 1886.	Arrears on 30th September 1885.	New Cases.	Disposed of.	Arrears on 30th September 1886.
1	Partitions of land under decree of Court	2	20	16	6	...	7	5	2
2	Sub-divisions on application of occupants duly sanctioned	...	3	2	1	...	2	2	...
3	Disputes necessitating remeasurement of fields ...	...	15	...	15	2	29	22	9
4	Disputes requiring fixing of marks by the field books.	30	67	36	61	...	31	14	17
5	Encroachments	5	130	55	80	5	84	64	25
6	Measurement of alterations caused by alluvion and diluvion	7	19	11	15	...	59	33	26
7	Measurement of land required for public purposes—								
	(*a*) Extramural burial grounds	46	33	50	29	7	33	28	12
	(*b*) Tanks	15	18	13	20	...	...	...	...
	(*c*) Roads	7	12	8	11	1	29	20	10
	(*d*) Dharmashálás and other public buildings	2	10	3	9	...	4	3	1
8	Measurement of land for building sites	11	31	26	16	...	51	44	7
9	Reclassification of survey numbers	1	4	2	3	...	3	2	1
10	Miscellaneous	28	142	87	83	...	118	82	36
	Total ...	154	504	309	349	15	450	319	146

In Dhárwár in the previous year the arrears were reduced from 192 to 154, though, during the year, 175 new cases arose. In the year under report, 504 new cases arose and 309 cases were disposed of, as against 213 of the previous year. In Bijápur the new staff entered on its work with very few outstanding cases. This was due to the previous deputation of 15 measurers, as noted in para. 4 of last Report. The number of arrears in both districts is large, chiefly because of the absence of due supervision. I personally made arrangements for the clearing off of arrears at a recent visit to Dhárwár, and Mr. Price hopes to dispose of all before the commencement of the fair season. Some of the cases, *e. g.*, of tanks and roads, are very complicated and difficult. A marked feature is the large number of encroachments detected by the new staff—an evidence of its necessity. Untrained Bhág Kárkúns could keep no check on encroachment, and numerous cases have come to light where the encroachment is as old as ten years. The work of measuring off burial grounds has progressed

satisfactorily. The remark just made regarding encroachment cases also applies to those of alluvion and diluvion.

12. Another very important work has been commenced. This is the work referred to in para. 10 of last Report—the thorough inspection of all the marks of each village in turn—to bring up the village map to date. The Inspectors are not all trained measurers, and, in order to prevent confusion and to make the best use of the supervision available, I was obliged to collect the Inspectors of each táluka into one selected village of the táluka. Insufficiently trained men had thus a good opportunity of learning their work. The inspection thus has been completed in 20 and begun in 7 villages of both districts. The month of May should have been devoted to the work, but, owing to the delay in posting the notification required by law and to the difficulty of obtaining labour and in some instances to the opposition on the part of the people, due progress has not been made. The new Rules regarding recoupment of the permanent advance sanctioned for the purpose, and the settlement made in the matter of forms required by the Collector's account office, and, lastly, the preparation of a special form of notification—all points brought out by the experience gained—will facilitate the work in future.

It has been found that redundant marks, cancelled at the time of the Revision Survey, are still kept up through ignorance or negligence. The removal of these marks is enjoined on the Inspectors, who are authorized by a ruling of Government to cause them to be removed by hired labour on default of the occupant. It has, moreover, been found that there exists a large number of intermediate mounds on the boundary lines of fields, which though erected by the Survey are not required by the most recent rules of that department. Thus whereas an intermediate mound was raised at intervals of 10 chains along the line of boundary, later experience justified the increase of the interval to 20 chains. Some villages were demarcated according to the old rule and some according to the recent one. Uniformity is very desirable, and the up-keep of marks should be reduced to a minimum in the interests of the people and of the supervising staff. The revised Circle Inspectors' Rules therefore prescribe that marks not cancelled at the Revision Survey, but found to be unnecessary by the latest rules, should be removed at the complete inspection, provided the occupants agree in writing and provide the necessary labour. An opportunity is thus given to the occupants to lessen their responsibility in the matter of boundary marks. It remains to be seen how far they will avail themselves of it. No authority is given in this case to the Inspectors to remove redundant marks at the cost of the occupant.

B.—Supervision of Village Records.

13. As stated above, I have no figures to show the work done at the annual ordinary inspection of marks to test the work of the village officers, or in the supervision of the cultivation returns and records of vital statistics, or in the check census. All these duties were presumably carried out according to the orders. They are all duties which the old staff of Bhág Kárkúns either wholly neglected or were unable to perform, and there is the satisfaction that the check was exercised by men trained at any rate to be able to do the work, even though I cannot show on paper the extent of the supervision.

The supervision of the work of the Inspectors under this head primarily devolves on the Revenue officers. The orders of Government are very explicit:

> It is clear that if 3 or 4 Circle Inspectors are resident in a táluka with no personal supervision by higher authority except a periodical visit from the Assistant District Inspector, they will virtually be under very little control, and are not likely to work with energy and precision. The Mámlatdár therefore and *a fortiori* the Assistant Collector should carefully watch the performance of their duty by the Circle Inspectors, though of course they will not alter the instructions of the Director. * * * Moreover, it is not by any means intended that the Mámlatdárs and Assistant Collectors should be relieved of any part of the duty which they now perform in personally testing the preparation of statistical records in the villages and making inspections of crops and boundary marks. And the Collectors and their Assistants should on no account allow themselves to think that as certain operations have been placed under the control of a distinct department, they are not any further concerned with them. (Government Resolution No. 2557, dated 24th March 1884, Revenue Department, para. 6).

I have no record of the extent of check and test performed by the Assistant Collectors and Mámlatdárs. Co-operation is essential. I am glad, therefore, that the Collectors have assented to my proposal, that the results of the tests taken by táluka and divisional Assistants should be communicated from time to time by them to Mr. Price, while, on the other hand, in a set of Rules for the regulation of the correspondence between Mr. Price and the officers of the Revenue Department, it is laid down that Mr. Price will, acting as an Assistant to the Collector, submit memoranda showing results of his own tests and those of his subordinates.

14. In one special point the Mámlatdárs appear to have failed to appreciate their responsibility. All the compilation of the village returns at the táluka head-quarters was carried out by the Inspectors, and it was the duty of the Mámlatdárs to supervise the compilation and to submit, from information obtained from the Inspectors who were able to give it, full remarks as to causes of increase and decrease in the crop returns and the figures of the annual census. No such explanatory remarks have been received. The attention of the Collectors has been called to this apparent omission.

C.—Agricultural Enquiry.

15. Beyond the actual knowledge gained during their regular work, the Inspectors have had their attention by the Rules directed to the principal features of the cultivation of the tract in which they are employed. This experience will be useful when the time comes for directing enquiry to any special subject on which information may be required.

D.—Recruitment.

16. I must note that the District Inspector of Bijápur has retired on pension, and the District Inspector of Dhárwár will retire at the end of the current month. The Bijápur post is being temporarily occupied by the Assistant District Inspector. As long as the Survey Record of these two districts was in my sole charge it was necessary that the head of the district staff should be a trained surveyor. That necessity no longer exists, since Mr. Price's transfer. Half the Circle Inspectors are trained measurers, and Mr. Price has a sufficiently strong head-quarter establishment in each district for the due correction of the Survey Record. Government has consistently demanded that the connection between the regular Revenue staff and the special branch partially or wholly under the Agricultural Department should be very intimate. Mr. Price requires trained Revenue men rather than surveyors as his District Inspectors. I therefore asked for sanction to raise the pay of the post to Rs. 150, in order to secure the services of selected junior Mámlatdárs or at least of men eligible for Mámlats and with early hope of promotion. Though sanction was accorded, I have not yet found men of the required qualifications. The reason is simply that I cannot yet guarantee that the promotion will run in the regular line. The principle is established that " the new establishment should not be so segregated from other Revenue establishments that there should be no promotion from the one to the other." (*Vide* para. 7 of Government Resolution No. 2557, dated 24th March 1884.) But this is not enough to induce the best of the junior Mámlatdárs to run the risk involved. I have selected one man for Dhárwár, whose promotion in the regular line has been guaranteed by the Commissioner, S. D. Even if such promotion entails reversion to the regular line, I prefer, for the present, to secure, in this the best way now possible, the class of men I require.

E.—Extension of the Special Staff.

17. I have endeavoured to extend the Circle Inspectors' staff to all districts without the survey element, which (see para 4) would be added on the departure of the survey. Experience has shown that the extension is very desirable in the interests of improved statistics, and, further that the strength of the staff required can only be ascertained by enquiry. I came to the conclusion, then, that the first step should be the appointment of the District Inspector alone, leaving the formation of his special staff till financial pressure should

be sufficiently relieved to permit of the expenditure required to improve statistics. I considered that the District Inspector alone would—besides ascertaining accurately the staff necessary for his district—be in special charge of the introduction of the new statistical forms (see para. 18) and of the compilation of the district returns. I proposed that the pay of the post should be equal to that of the Revenue Mámlatdár, and made suggestions as to how due promotion should be provided for. The scheme involved an immediate increased expenditure of Rs. 3,800 per mensem. Its features met with approval from the Divisional Commissioners. Government, admitting that the scheme was not in itself unreasonable, thought it desirable to refer it for detailed consideration of the Divisional Commissioners in Committee assisted by the Survey Commissioner and myself. Meantime the restrictions on expenditure due to financial pressure had become even more stringent than when the proposals were originally made. The Commissioners thought, therefore, that the scheme was beyond the field of practical discussion. It remains undisposed of, to be taken up when money is available. Meanwhile all the arguments used by the Commissioners as to the necessity of strengthening the Mámlatdárs' insufficient establishments and all the promises made to the Government of India regarding steps to remodel the staff of supervisors of village statistics, remain unanswered and unfulfilled.

F.—Village Statistical Forms.

18. Some progress has nevertheless been made in the interest of improved returns of cultivation and other agricultural and economic statistics. The revision of the Manual of Village Accounts and Statistical Forms has been completed by Mr. W. P. Symonds, who was on special duty for nine months in all. The revised forms were introduced from the beginning of the current revenue year (1st August 1886). The Táluka and Huzur portions of the Manual are, as far as statistical forms, ready for introduction, but a good deal is yet to be done in the revenue forms. The benefits of improved forms depend on experience and supervision. The former will be gained, but the latter is barred by want of funds.

It need hardly be said that in the newly modelled statistical forms the fullest consideration has been given to the duty of the Agricultural Department to supply the required data for revision of rates on the expiry of current settlements. New forms have, therefore, been added with this special object. These are :—

1. A register of rainfall.
2. A register of prices of staple products and wages of labour, skilled and unskilled, at the principal market towns of each táluka.

G.—Examination.

19. The question of the departmental examination of Circle Inspectors (last Report, para. 24) has not yet been settled. It is desirable to await the decision of the Education Commission appointed by Government Resolution No. 1056, dated 9th July 1886, Educational Department, of which I am a member. In the meantime special instruction is given to the Circle Inspectors. The men appointed to the Bijápur District—other than those recruited from the Survey Department—were examined in October 1885. Of 19 in all 4 failed. These last and others, proved insufficiently trained in the survey duties of their work, will be examined by Mr. Price in his tour, and obliged to attend at head-quarters for further instruction if they fail to reach the standard which I have indicated to Mr. Price.

H.—Degree in Agriculture.

20. (Last Report, para. 25). The progress made consists in the preparation of a proposed curriculum for the degree or license in agriculture by the Committee of Fellows appointed by the University. The course proposed extends over three years, thus bringing it on an equal footing as regards duration with that

of an Art's College. The standard of efficiency has also been proportionately raised. Knowledge will be imparted in the subjects which are most intimately connected with the requirements of the Agricultural Department. Besides higher mathematics, including Euclid, algebra, trigonometry, surveying and levelling, the proposed license demands a sufficiently high test for knowledge in chemistry, botany, agriculture and veterinary science. The chemistry and botany here prescribed are those principally concerned with the farm. The new degree is proposed to be affiliated to the Faculty of Civil Engineering with which it is intimately associated. In connection with this discussion, Dr. T. Cooke, Principal of the College of Science, drew up, in May last, a memorandum inviting attention to the great progress made by America and Germany in the matter of agricultural education, and showing the desirability of adopting a similar course in India, whose chief revenue is derived from the soil. The scheme is under consideration by the University.

21. The subject of selecting Circle Inspectors to go to the College of Science to obtain an agricultural training, referred to last year (para. 26) so much depends on (1) the re-organization or enlargement of the College of Science on lines similar to those laid down in Government Resolution No. 3E, dated 15th September 1886, on technical education, and which I have long advocated, and (2) on the establishment of a degree in agriculture, that I do not think at present further action is desirable.

II.—ANALYSIS OF DISTRICTS WITH REFERENCE TO SECURITY FROM FAMINE.

22. The task of preparing district accounts set by the Famine Code has been undertaken by me, as stated in last year's Report (para. 29). Most of the Collectors have furnished information on the set points. The Dhárwár account is ready with a carefully prepared map; and though the plan, on which this sketch has been modelled, cannot be fully followed in other districts till the Revision Survey is introduced, the accounts for all districts will be rapidly made up from the reports received and from all available information from published reports and from old records. The Dhárwár account will be submitted shortly through the Divisional Commissioner. The materials carefully collected by Mr. Krishnaráv Narsinh, one of the trained men of the Gazetteer establishment, proved very useful to me in writing the summary. The more elaborate "Agricultural District History and Manual" will, as has been intimated, be a work of time (last Report, para. 30). The Dhárwár draft is in Mr. Price's hands.

III.—SYSTEM OF COLLECTION OF REVENUE AND RENTAL IN PRECARIOUS TRACTS.

23. Special provision has been made in Chapter VI. of the Bombay Famine Code which fully describes the system under which the collection of the revenue from land in precarious tracts is regulated. By that system, Collectors are authorized at their discretion to suspend revenue instalments when an abnormal failure of the harvest has been ascertained. The suspended revenue is, subject to enquiry after the temporary distress has ceased, either collected or remitted. The principles on which remission is finally granted, are fully laid down in the Code, and need not here be referred to. When collection is ordered after enquiry, the Collector is again empowered to fix instalments to prevent pressure.

IV.—MEASURES OF PROTECTION, INCLUDING—

(1) Fodder Reserves and Arboriculture,

(2) Extension of Communications.

(3) Irrigation.

24. As usual, I will confine myself to questions of special interest to the Agricultural Department.

(1) *Arboriculture.*

A.—Ba'bhul—its value as a dye.

25. The reply from the Secretary of State regarding the consignment of pod shells of the *bábhul*—Acacia Arabica—has been received. (Last Report, para. 33). They were submitted to experts for valuation, and the opinions were published in the *Government Gazette* dated 29th October 1885, pages 1240-1242. Mr. T. Wardle thinks that as a dye the substance has little value. It produces only a fawn dye. But it has properties as a mordant, and its value in dyeing arises from its contained amount of tannic acid. This both helps to form a black with iron salts and to brighten and fix some other dyes. Compared with the price of sumac, £ 16 per ton, Mr. Wardle thinks that the pod shells should fetch £ 9. He throws out a suggestion that the tannin should be extracted in India from not only the pods, but from the bark and even the branches. Mr. W. N. Evans, another expert, states that the amount of tannin extractable is more than 25 per cent, which is the amount obtained from balonia. Mr. Wardle estimated the extractable percentage of tannic acid at 10·26 per cent., equivalent to 15·39 per cent. of tannin, as compared with 18 to 20 per cent. from sumac. Mr. Evans points out the advisability of gathering the pods ripe, to facilitate the separation of the seeds, which make up 60 per cent of the seed pod and contain no tannin. Other experts declare that the material is not rich in tannin. The valuations of the pod shells vary from £'9 to £ 10 per ton. It will be remembered that in the note received from the Government of India in 1884 the dry legumes (*minus* seed) were valued at £ 40 per ton, but even at the reduced estimate the extraction of tannin would probably pay.

B.—Ba'bhul Plantations.

26. District reports have been received. (Last Report, para. 33.) Násik is the only district where grants of land on favourable terms for the purpose have been made. In the Chándor Táluka a field of 3½ acres, assessed at Rs. 11, bounded by a *nála* and so subject to frequent flooding and on that account waste for many years, has been given out for bábhul planting only, at a reduced charge of 8 annas. Two other similar grants have been made. All these cases are in the right direction. From parts of Gujarát it is reported that there is no waste land, or that the bábhul abounds. In the Southern Marátha Country it is said that the tree abounds, and that no applications for grants under the Resolution have been made.

Though these facts and others are true, I contend that there is ample and useful scope for encouraging the growth of the bábhul in good soil, and in special bábhul plantations. Besides the possibility of a profitable export of tannin, it is in other respects a tree of great utility, provided it is confined to set areas. I am beginning an experiment at the Bhadgaon Farm which I think will prove its value. This experiment consists in sowing bábhul on carefully cultivated and good land, in rows 12 feet apart. Between the rows cotton has been sown. The bábhul thus gets the benefit of the bullock-hoeing for the cotton. Next year an early crop will be taken. After that the land will be left to bábhul, and will yield a profit in yearly thinnings. It remains to be seen whether it will pay best then to clear away the bábhul, or leave it to grow If left, the land will, when the bábhul is high enough, yield good grass. Such a bábhul reserve close to a village in the dry black-soil plains of the Deccan and Southern Marátha Country would give a good profit, and I think that the design of the Resolution is that owners of *occupied land* should thus be induced by suitable remissions of assessment on the land so devoted to bábhul to grow the tree. The injury done by bábhul to cultivation when grown as a road-side tree or among other crops will be discussed later on. This all tends to show that the proper and profitable use of the tree is secured by confining it to set areas. It has a known capacity for taking up salt from land which shows a tendency to infertility from an excess of salt. In the Don Valley, where reh or salt efflorescence sterilizes land, this growth of bábhul was a common practice when land assessments were lower and when land could be thrown up for a term of years with the certainty of its recovery when required. The Resolution shows how

under present conditions the same end may be obtained. The Resolution is not intended to apply to the Konkan, where bábhul does not grow well, and where other trees are abundant, but to black-soil districts.

C.—Trees on Road-sides and Canal Distributaries.

27. In 1885 the advisability of planting trees along canal distributaries was fully discussed, and Government in the Irrigation Department ruled that such planting should be discontinued. In exceptional cases, where the owners of land traversed by the distributaries express a wish, in writing, for the planting, it will be allowed, but even then it is enjoined that careful regard shall be paid to reasonable preferences as to the kinds of trees to be selected.

Government Resolution No. 95 W. I.—210, dated 5th May 1885, Public Works Department.

The reports of the Executive Engineers and of other officers, to whom the question was referred for opinion, contain much valuable information as to the fairness of the objections raised by the rayats to having trees in the midst of cultivation. This objection was strong enough to induce the landholders in several districts to offer the land required for distributaries without compensation, provided a guarantee were given that no trees should be planted. The objections were supported by the facts alleged and generally admitted, that trees harbour birds which damage crops, that crops are injured by the shade of trees and by the spreading of their roots, and that low branches prevent the passage of the plough and harrow. As to the damage done by birds, there is, no doubt, a partial compensation in that the birds do good as well as harm by destroying caterpillars and the like. But this compensation is not sufficient inducement to the owner of any particular field. He can hardly be expected to be ready to provide harbour for birds so that his neighbours may be benefited, and he may well urge that he will receive just as much benefit from the destruction of insects where there are no trees.

28. The arguments against tree-planting along canal distributaries apply fully to trees planted along road sides, and along the boundaries of fields elsewhere, and among cultivation. An immense deal of trouble and money has been expended by district officers to overcome the apathy and prejudices, as they were supposed to be, on the part of the rayats in this matter. The arguments used are that in the black-soil plains, where fuel is scarce, the rayat by growing trees along the field boundaries will provide fuel and wood for the plough, and thus be able to use the manure of his cattle for its legitimate purpose—enriching the land, or rather returning in part to it the fertilizers extracted by the crops.

Again, it is urged that belts of trees in these bleak plains will check the furious winds which in their unimpeded passage over standing crops do great harm.

The first point to notice is, that there is evidence on which the degree of damage done to cultivation by different trees can be fairly indicated. Fruit trees, which give a good return annually to the planter, further offer compensation for damage done. The standing orders regarding road-side trees and trees on field boundaries are to be found in Nairne's Hand-book. From these it will be evident that the injury done to cultivation was by no means overlooked in the orders to Revenue officers. Thus advice is given as to selection and instructions as to the authority the Collector should exercise to grant sanads to assure the planters of fruit trees the enjoyment of the fruit. In the same hand-book advice is given as to the suitability of different trees for different soils. There is thus abundance of guiding rules, but I am inclined to think that the merits of trees to make a good avenue have, in practice, carried the day against the demerits of the same trees when their effect on crops is considered.

29. I find that at the Bhadgaon Farm, some years ago, the then Collector, Mr. L. R. Ashburner, who above all others made himself conspicuous in his endeavours to encourage road-side plantation and the growth of trees on field boundaries and in the midst of cropped land, ordered an experiment to be made at the farm. A field was chosen through which a canal distributary passed. The

borders of the field and both sides of the channel were planted. The object of the experiment was to gauge the weight of the objections raised against the extension of such planting.

Before I give the evidence afforded now by this experiment, I will quote in detail the remarks made by the Superintendent of the Farm :—

83. *Damage to crops.*—It is much to be desired that the laying down of bábhul plantation should become sufficiently common to meet all demands for field implements and fuel, so as to admit of every bábhul tree being cleared away from the proximity of cultivation. The enormous destruction caused principally to cold-weather crops by trees, especially when the rainfall happens to be short, does not seem to be generally understood, unless amongst cultivators themselves.

84. Under the orders of the late Collector of Khándesh, W. H. Propert, Esquire, I made this a subject of special study during my tours in the district last cold weather, and have gathered together much information, only a piece of which need be given here.

85. It was found that *linseed* suffers by far the most severely from shade, after that *wheat* (*vide* para. 38), and, lastly, *gram*. The trees named in the margin are those usually found on field boundaries and road-sides, and are arranged in order of their destructiveness. While the first is by far the most mischievous, the last on the list is the least so, and, therefore, the most fit for road-side planting; where cultivated fields come in the way, the owners of such fields are greater sufferers from the effects of shade than is generally suspected. I was fortunate in being able to point out numerous such fields to Mr. Propert, Collector, and Mr. Ozanne, Director of Agriculture,—to the former in the best rabi portions of Khándesh, to the latter also in parts of the Poona District. Both gentlemen were much interested, and desired that this mention of it should be made in the Farm Report.

Bábhul (Acacia Arabica).
Tamarind (Tamarindus Indicus).
Siras (Acacia speciosa).
Mango (Mangifera Indica).
Nim (Azadirachta Indica)

86. It is curious that this sterilizing influence of bábhul shade seems to be most active when the sun is only slightly above the horizon, or, as cultivating people express it, at 8 in the morning and 4 in the afternoon. Thus a tree in the middle of crop destroys two triangular patches, one to the north-west, the other to the south-east, the height of each triangle from base to apex being usually equal to about twice the height of the tree.

87. The average of a number of measurements made with 35-feet trees, worth Rs. 2 each, exhibits a destruction of 240 square yards or 2 gunthás of crop, which, at the moderate estimate of 8 annas per guntha, shows that the tree, so to speak, eats off its head once every two rabi crops or once in four years. It is for this reason that the large bábhuls are generally to be seen with their branches hacked off close to the trunk.

88. Many explanations have been suggested regarding the evil influence of trees, and I also have formed an opinion of my own, but do not care, for the present, to go beyond mere observation, my object being to prove that in cutting down their field bábhul and carting it for sale to the press factories and spinning mills the cultivators are carrying out a much-needed agricultural improvement, and should by no means be interfered with. Before the days of forest conservancy the practice would have been injudicious, but is now only the ordinary operation of cause and effect.

The results of the special experiment referred to above may now be given.

There were only two fields in the farm moist enough in the year of deficient rainfall to have any chance of producing a fair crop of wheat without irrigation. One gave a yield of 450 lbs. per acre. The other, surrounded by trees and intersected by a channel with both sides planted with trees, gave an average crop of only 132 lbs., though 8-guntha plots selected in the centre of the field away from the influence of the trees showed a yield equivalent to 425 lbs. and 475 lbs. per acre.

The field is 10 acres. The loss due to trees was, therefore, taking 450 lbs. per acre as the crop which would have been produced but for the trees, no less than 320 lbs. per acre of grain, besides straw (1,000 lbs. per acre).

This field was sown by the ordinary labourers of the farm. The seed did not germinate in the land under the influence of the tree shade. It was again sown by Mr. Stormont himself twice. The seed sprouted, but the seedlings rapidly died off, and there was no crop close to the trees, and little even at a distance of 2 chains.

30. I personally made an experiment in the Bijápur District. A wheat field adjoined a large row of bábhul trees in the compound of a travellers' bungalow.

The trees were well grown. The soil was excellent black. The season was very favourable to wheat. The crop was not touched by rust or other disease. The cultivation was very good. I cut portions of the crop 1, 2, 3 and 4 chains from the boundary of the field, leaving the headland 6 feet wide out of the measurement, and then took an experiment on the crop, beginning at the end of the 4th chain. The results were as follows:—

				Per Acre. Lbs. Grain.	Lbs. Straw.
Crop between	0 & 1	chain from headland	...	Nil.	Nil.
Do.	1 & 2	do.	...	112	180
Do.	2 & 3	do.	...	96	310
Do.	3 & 4	do.	...	138	450
Do.	4 & beyond	do.	...	712	706

It is clear from these figures that the influence of the trees extended to 4 chains (132 feet) from the high bábhul trees.

I noticed, two years ago, a striking case. In Dhárwár a road running due south was lined on both sides with bábhul trees. There was no crop in the cotton field close to the trees, and the damage extended at least 3 chains from the trees.

31. The Executive Engineer for Irrigation, Sátára, noticed that along the Krishna Canal, where the bábhul has grown well, the land lies uncultivated within 50 feet of the boundary hedge. This officer notices that the bábhul damages crops by an exudation which drops from the trees, and blackens the soil all around. But the injury cannot be attributed entirely to this cause, for the influence extends far beyond the immediate neighbourhood. The Survey Commissioner called attention to the advisability of ascertaining the order of harmfulness in which trees should be ranged. He charges the fig tribe with doing great injury by their roots running riot underground, and gives an instance where the soil was permeated by the roots of a large *pipal* (Ficus religiosa) 60 feet from the trunk. The Commissioner, N. D., Mr. Sheppard, does not admit the justness of the great objection to the bábhul in Gujarát, but states that he has had to deal with applications for remission on account of the shade of *vad* (Ficus Indica) trees along public roads.

32. I think that Mr. Stormont has rightly placed bábhul as the chief enemy to cultivation. His remarks as to the degree in which different crops suffer and as to the influence of season on that degree, are very apt, and are fully borne out by my own observation.

The sum and substance of my whole study of the subject is that bábhul should not be planted nor allowed to grow either as a road-side tree, or on canal banks, or amid cultivation; but that it should be relegated to separate areas. District officers have the power of thus encouraging its growth. I need only refer to para. 26 of this Report. Dr. Gibson, whose advice as to the selection of road-side trees has been considered worthy of being accepted as the standing order on the subject, declares that the imperfect shade of bábhul is a drawback against its utilization as a road-side tree, but he adds that the "ease with which it is raised and its hardiness in growth render it desirable for planting or for being kept up when it springs up naturally, as is often the case, near the other trees on the road line." In the standing orders, Government directs that "bábhul should *never* be *planted* as a road-side tree, except where no other trees will thrive." "It affords a very imperfect shade," but the further direction is given "that bábhul should be tolerated when it springs up spontaneously in soil well suited for its growth, for it is better than nothing," and that "it is not intended that bábhul should be cut down to make room for other trees."

I place on record my conviction that, to use Mr. Stormont's words, in cutting down field bábhul the cultivators are carrying out a much-needed agricultural improvement, and I trust that these remarks will lead to a modification of the standing order that bábhul should be *tolerated* when it grows spontaneously on road-sides, and to a stricter reiteration of the order that it should not be planted either on road-sides or canal banks.

I have noticed numerous cases where bábhul springing up spontaneously is doing great harm to nim and other better trees, and the Collector of Khándesh

has wisely assented to my proposal to thin out bábhul thus obstructing on the road from the Bhadgaon Farm to the Páchora Station. Bábhul springs readily in black soil, especially on loose banks, and if it is not cut out will rapidly increase the injury it now does to cultivation as time goes on.

I must here notice that bábhul and other trees planted on roads running east and west do very much less harm than when the road runs north and south. Whatever other injury bábhul may do, its shade is the chief cause of the harm done. I have not made any exception for road-side spots which do not adjoin valuable cultivation, simply because in such bábhul will not grow.

D.—Ra'b Experiments.

33. These have been heretofore noticed under this head. The decision on the ráb question has been left to the Forest Commission. I have conducted personally careful experiments at Karjat for two years, though last year the experiments were also conducted in four other places. Full reports have been submitted to Government, and on the reports careful reviews and criticisms have been recorded by Revenue and Forest officers. The question—whether it is feasible to carry out the suggestion of the Commissioner, C. D., to select areas for ráb reserves, to plant them, and leave their supervision to the Forest Department—is one that will be considered by the Forest Commission. It would, therefore, be inappropriate for me here to notice the subject further.

Report for 1883-84, para. 13.

(3) Irrigation.

34. The subject of well irrigation was treated at length in the last Report, (paras. 35-42). It was there recorded that in the opinion of the officer—specially deputed to enquire—no water-lift yet tried can show superiority to the common *môt*, or leather bag, such as would warrant its supersession. I have during the past season visited a tract where the *môt* is not suitable and where it cannot compete with the Persian wheel. I refer to the garden tracts of North Thána. This tract is exceptional. The depth of water in the wide wells is generally too little to admit the leather bag. The common pattern of the Persian wheel is extremely rude, and demands a large amount of valuable timber for its erection. The rise in value of timber has induced attempts to economize. Two new patterns are under trial. One, the invention of Mr. Rámchandra Náráyan Maráthe, of Bassein, and another, a modification of the chain pump devised by Mr. D. V. Dándekar, of Máhim, are both attracting attention. Both are estimated to reduce the initial cost of the construction of the wheel and its platform from Rs. 400 to about Rs. 100. The people of Bassein subscribed Rs. 100 to enable Mr. Maráthe to take out a patent for his invention. With their concurrence, I asked Government to award a sum of Rs. 500, on condition that the people of Bassein should be permitted the free imitation of the improvement, which is only of limited application. Government, however, ruled that the inventor should not be debarred from applying for a patent, and that it was unlikely that imitation would be impeded by the small extra cost which a patent would involve, if the invention were proved really useful and worthy of imitation.

35. The pulsometer worked by steam has been tried privately at Umreth in the Kaira District. The outlay, over Rs. 1,500, is considerable, and the machine has, as far as I have been advised, not yet fulfilled expectations.

36. Drainage schemes in the Ahmadabad and Broach Districts have received the attention of the Irrigation Department; and, though I have no immediate connection with them, the subject is one of considerable interest to the Agricultural Department, and a short account is, therefore, recorded in this Report.

In recommending the drainage scheme for Viramgám, the Chief Engineer for Irrigation urged: "That, owing to defective drainage which at present obtains, it is reported that 6,656 acres of land have been thrown out of cultivation, representing an annual loss of Rs. 7,573. Of these, 3,070 acres are in occu-

pancy, and the assessment on this area, Rs. 3,293, represents the annual amount of remissions on account of the defective drainage, while 2,486 acres of Government land assessed at Rs. 3,180 and 1,100 acres tálukdári assessed at Rs. 1,100 are lying waste." The scheme comprised the excavation of channel and the construction of waste weirs and regulator. The total cost of the scheme, including works, establishment, tools and plant, was estimated at Rs. 78,832, which would bring in a return of about 10 per cent on the whole outlay. Both the Collector and Commissioner supported the project. The plans and estimates were sanctioned by the Bombay Government in the Public Works Department, who admitted the urgency of the work, which "will not only secure a considerable revenue which has now to be annually remitted and bring again into cultivation a large area of land now lying waste, but will materially improve the health of the large and important town of Viramgám, which has for many years suffered from the accumulation of rain-water." As no provision was made for the work in the budget for 1886-87, and as such a large sum could not be made available by re-appropriation from any other item in the budget, the Government of India was requested to make an additional grant of Rs. 79,000 under Ordinary Irrigation Works when passing orders on the budget estimate for 1886-87. No additional grant was made by the Government of India for want of funds for the purpose.

Government Resolution No. 34 W. I.—75, dated 20th February 1886, Public Works Department, Irrigation.

Government Resolution No. 45 W. I.—117, dated 24th March 1886, Public Works Department, Irrigation.

In Broach, attention has been at different times drawn by the Revenue officers to the injury to the lands in the district through want of proper drainage to carry off the flood waters, and in 1875 rough estimates were submitted by Mr. Gregory, but on these no action was taken. In 1884 the subject was again pressed on the attention of Government by the Commissioner, N. D., and surveys were sanctioned in Government Resolution No. 172 W. I.—367, dated 11th August 1884. It appears that the natural drainage channels have by degrees silted up, which has led to the lands remaining water-logged during and after the rains, with consequent annual damage to crops. A loss of revenue, amounting to Rs. 15,083, has resulted, while necessarily also the sanitary evils accompanying bad drainage have arisen. Plans and estimates for seven drainage channels, costing in all Rs. 1,78,120, were prepared. The financial result will be a return of 8·47 per cent. on the outlay. The Revenue officers strongly advocate the adoption of these measures. The work was sanctioned as an agricultural work by the Bombay Government, who are fully alive to the great benefit likely to be derived from it, judging from the success which has attended similar works on a smaller scale which have been carried out in other parts of Gujarát. As in the case of the Viramgám drainage scheme, the Government of India refused to make an additional grant in considering the budget estimates for 1886-87, owing to want of funds for the purpose.

Government Resolution No. 35 W. I.—76, dated 24th February 1886, Public Works Department, Irrigation.

Government Resolution No. 45 W. I.—117, dated 24th March 1886, Public Works Department, Irrigation.

Of the seven drainage channels in Broach the urgency of the Amanpur-Nadiád channel was pointed out by the Commissioner, N. D., in reference to the outstanding balances and waste lands in the Jambusar Táluka in 1884-85. These and the steady decrease in the cultivated area, the Commissioner attributed to defective drainage. Government in the Public Works Department have decided that the channel in question should be the first of the systems to be undertaken next year after making provision for the Broach drainage scheme in the budget estimates for 1887-88.

Government Resolution No. 71 W. I.—171, dated 7th May 1886, Public Works Department, Irrigation.

V.—AGRICULTURAL EXPERIMENTS INCLUDING FARMS.

A.—Experimental Farms.

37. The annual reports were distributed early in September. A small delay arose from the addition of a map to the Haidarabad Farm Report. The

Bhadgaon Farm has been partly remeasured by the surveyor who was attached to my office, in order to bring the map to date. Since the original survey, alterations in area, due to buildings, roads, and water channels, have arisen, with the result that the acre yield found by dividing the gross outturn by the registered acreage was inaccurate. The map will accompany next year's report.

38. I have not visited the Haidarabad Farm since 1884; but I was able to pay 3 visits since the date of my last report to Bhadgaon, remaining a week in the most interesting cultivation period. The condition of the farm is greatly improved. At Bhadgaon there has been no change in the *personnel* of the supervising staff. Mr. Stormont has worked with his usual energy, and Mr. Dádina, his Assistant, has gained experience, and is more expert and accurate in the conduct of experimental work. Mr. Navroji as unpaid Assistant has shown zeal. A Kunbi apprentice deputed by the Ahmadnagar Local Fund Board after some practical experience on the High School Farm, has given satisfaction. There is room for more apprentices, and the example set by Ahmadnagar is worthy of imitation.

39. I have reserved my review of the operations of the farms for these pages, to save repetitions and to contrast the results of similar experiments conducted on the Government farms and elsewhere.

The Season and Financial Results.

40. At Bhadgaon another bad cotton year has been added to an already long series. The rainfall was short and unseasonable. Cotton was not sown till the middle of July—5 weeks too late for the best results. A long break from the middle of August—lasting nearly a month—was injurious to all crops but jowári. The late September rain was full, but an injuriously heavy fall was experienced in December. Cotton, bájri and dry wheat were poor. Tili was fair. The jowári crop was excellent. Cotton is the staple, and no amount of success with other crops can make up for its deficiency. Moreover, on the farm the delicate and uncertain exotic American is grown with a certainty of greater risk and of less profit than could be obtained by cultivating the indigenous variety, to keep up as far as possible a supply of seed to be available when the tide turns in favour of the long staple.

Year.	Inches.
1885-86 ...	21·40
1884-85 ...	28·11
Average from 1880	31·89

Exclusive of the pay of the Superintendent (Rs. 4,500) and his travelling allowance (Rs. 413), which latter is only chargeable for convenience of account against the farm, the deficit amounted to Rs. 2,341 against Rs. 1,400 of the previous year. The up-keep of the Government breeding herd (Rs. 1,177), long located at the farm, has, however, been for the first time charged against the farm. The transfer of the herd to the farm account is rather an investment than a loss, for it will eventually more than repay its keep. The area of pure experiment being considered, I consider the cost of the farm very reasonable.

41. The Haidarabad Farm is a very much smaller institution. The pay of the Superintendent is shared by the Economic Garden supported by the municipality. The season was good. A favourable inundation of the Indus and a light and favourable rainfall were the chief features. The deficit was only Rs. 214, though neither is the share of the Superintendent's pay debited, nor that of his Assistant (Rs. 960), whose chief duties are those of Agricultural Teacher of the High School. Credit is taken for the rent of the land of the old farm at Saláru (Rs. 1,460), a credit only justified by the great cost incurred in bringing the present farm into a suitable condition for cultivation. It must be also noticed that the proportionate cost of permanent improvements at Haidarabad (Rs. 234) and the full assessment of the arable land at Bhadgaon (Rs. 679) are debited.

The land of the Haidarabad Farm is unassessed, and indeed without the large expenditure incurred could not have yielded any rent.

The whole cost to Government of both farms was as follows:—

Bhadgaon.

	Rs.
Pay of Superintendent	4,500
Expenditure	10,411
	14,911
Deduct receipts	7,657
	7,254

Haidarabad.

	Rs.
½ pay of Superintendent ...	2,250
Do. of Assistant Superintendent...	480
Expenditure	4,408
	7,138
Deduct receipts	4,193
	2,945
Total Rs. ...	10,199

I trust that the review of the experimental working of the farms will prove that this outlay is justified, especially when no credit is taken for the improved value of the land, which in both cases is very large.

Experimental Results.

42. The first point to notice is that I have found it impossible to carry out the letter of the orders of the Government of India regarding the tabulation of results in set forms. In my humble opinion, this order is only applicable to a very limited class of experiments. Seeing the difficulty which Mr. Stormont was experiencing at my visit just after the submission of his report, I undertook to prepare the tabular statement in my own office, but it cannot be done. Mr. Strachan made an attempt; but the tabulation, such as it was, could neither add to the value of the record of experiments in the body of the report, nor to facility for intelligible collation of results in the Central Office of the Revenue and Agricultural Department of the Supreme Government. It is, in my opinion, impossible to make one form of statement fit in with the special requirements of all classes of experiments. Each has its peculiar features, and it is on these that its value depends. The compilation of experimental results, obtained in different localities and under different conditions, is most desirable. I endeavoured in para. 51 of my last year's Report to urge its importance. A digest for information and for guidance is wanted, but it cannot be secured by the mere fixing of a form. I believe the results of all experiments are, in the body of the reports which have been submitted, shown in the most useful and intelligible forms; and these taken with the review which is given below will give the greatest facilities for intelligible compilation. I trust that the failure in responding to the orders of the Supreme Government may have some effect in proving the necessity of the appointment of an officer competent to digest the reported results of experiments received from the various Agricultural Departments. The very formulation of the orders corroborates my contention that a digest is greatly needed.

Government Resolution No. 935, dated 4th February 1886, and Government Resolution No. 2520, dated 1st April 1886, Revenue Department.

Experiments on Manures.

43. *Green manuring.*—Last year, hemp as a green manure showed no increase for wheat, but in the same plot this year sown with cotton the yield was slightly better than that of an unmanured plot adjoining.

44. *Cowdung ashes.*—Last year it was found that gram on plots manured respectively with 30 tons per acre of fresh dung and with the ashes of a similar amount, showed only a small increase in favour of the fresh material. The same plots were this year sown with bájri. The ash manure gave 1,015 lbs. grain and 7,530 lbs. straw; the other, 195 lbs. grain and 2,660 lbs. straw more. Again, other plots manured similarly, though the amount was 20 instead of 30 tons, showed 318 and 348 lbs. of gram with the ashes and 643 and 540 lbs. with the fresh manure, double in the former and nearly double in the latter. Taking this increase with that which the bájri showed above, it is proved that the ashes cannot give nearly as good a result for two and perhaps more years as the fresh dung. But the question remains—is the loss of the use of the dung first as fuel before its use as manure compensated for by the extra profit secured? Mr. Stormont thinks not. His remark is: "The cultivator who applies 30 lbs. of fresh dung to his land, instead of its ashes, gains thereby Rs. 4 worth of grain

at the sacrifice of about Rs. 20 worth of fuel for his domestic hearth." I had to point out an overstatement last year (Report, para 45), and have to do so again now. The above conclusion is unwisely based on the first experiment only. If the calculation is made on the average of the latter two, the gain in fuel will be found, even estimated at the rates used by Mr. Stormont, to be Rs. 13, but that in crop nearly Rs. 10 in one year, with a certainty of still greater proportionate gain the next and perhaps the third. The conclusion also neglects the mechanical and other benefits arising from the application of the fresh dung.

The experiments, however, show the great loss which is occasioned by the neglect of the use of ashes as manure—a neglect which I have observed among cultivators, but I must admit chiefly in tracts where ráb is practised. In these tracts the burning of the manure on the seed-bed is all essential, but it is egregious folly to neglect to use available ashes as a simple manure on the area not seed-bed.

Mr. Stormont has not been able to demonstrate the superiority of well-kept dung over that badly kept. Cowdung cannot be utilized at the best advantage if it is allowed to ferment rapidly and exposed to rain. An admixture of litter is a great preservative of the valuable parts of the manure, and the absence of any litter in the dung heaps of the country is very marked. Cowdung is the most valuable of manures, and if the Agricultural Department by enquiry and experiment and demonstration can prevent loss and teach a better practice, where the local practice is found wanting, it will achieve a great success.

45. *Good and poor dung compared.*—The demonstration of the benefit arising from using the manure of well-fed cattle and relegating that of poor-fed beasts to the necessary fuel supply, using its ashes only for manure, has been made. The plots of gram, above referred to, manured with the dung of ill-fed cattle gave a yield of 540 lbs. of grain and 850 lbs. of straw as compared with 643 lbs. grain and 910 lbs. straw on plots manured with the manure of well-fed animals. Plots manured with the ashes of good and poor manure showed little difference, as might have been expected. I trust that Mr. Stormont will conduct further experiments to clear up the difference of conclusion between us which now exists.

Tillage as Manure.

46. I have purposely classed the Lois Weedon experiments under this head, for it is a means of substituting extra tillage for manure. It consists in growing wheat (or other crop which repays extra tillage) continuously in belts, with interspaces fallow, but frequently cultivated. At Bhadgaon the experiment has reached its second year. At Haidarabad, owing to the re-division of the farm land, the first stage has been repeated.

Bhadgaon.	1885.		1886.	
	Grain. Lbs.	Straw. Lbs.	Grain. Lbs.	Straw. Lbs.
Lois Weedon wheat...	615	650	550	805
Continuous wheat ...	800	1,210	540	1,229
Wheat in rotation ...	956	1,962	667	1,311

The continuous unmanured dry-crop wheat is grown as a standard whereby to compare the results of the system under experiment and that usual in the neighbourhood under which wheat is taken in a three-year shift following gram and preceding jowári. All the plots were unmanured and unirrigated. A complication clearly is evident from the unevenness of the various plots. In the *first* year this alone accounts for the superiority of the rotation over the continuous wheat plot. Another disturbing influence is that of season exemplified by the difference in yield in the rotation plots of the two years. The former inequality will disappear after, say, the first course of three years is completed, and the merits of the system will be shown well by the results of the second three years. As it is, some merit is evident, for on the Lois Weedon plots the grain yield

from half the amount of seed is superior to that of the continuous plots, and not far behind that of the rotation plots. The extra cost of tillage is estimated at Rs. 5-10-0 per acre, and the saving is only 35 lbs. of seed. But it may be remarked that the tillage can be done by the rayat when there is leisure from other field work, and that the rates of wages on a Government farm are very high, and that the tillage this year represents the cost of a fertilizer for next year's crop. Moreover, the cost can be reduced when the system is better understood.

At Haidarabad the results were:—

Haidarabad.	1885.		1886.	
	Grain. Lbs.	Straw. Lbs.	Grain. Lbs.	Straw. Lbs.
Lois Weedon wheat...	2,102	5,707	1,202	4,082
Continuous „ ...	2,000	5,715	1,405	5,507

These both represent the results of the *first* year, owing to the necessity of shifting the site. The half-sown plot was actually better in 1885 than that fully sown, which points to the suitability of the system for Sind. The rotation plot will not appear till the third year, as provision was not made for having one rotation plot yearly as at Bhadgaon. The wheat is all irrigated at the Haidarabad Farm. It is a question whether the system would not be more profitable at Bhadgaon with irrigated wheat. To test this, I have arranged for a complete set of plots—all irrigated. In irrigated land, manure, too, is a more important question of practical farming, and a system which would enable a rayat to grow wheat continuously without manure would prove very profitable. I may add that the system will this year be tried also with cotton in Sind. Mr. Strachan's practical knowledge of Sind farming leads him to expect good results.

Use of Pickles to prevent Smut.

47. At Haidarabad there was no smut at all on any crop, owing to the light rainfall. The experiment was, therefore, negative in its results.

But at Bhadgaon a bad smut year has proved the benefit of pickling. A new pickle tried by Mr. Stormont, the carbolic-acid pickle, gave excellent results. An area which produced 2,800 lbs. of grain (jowári) showed only 15 smutted ears; while a similar area giving 3,652 lbs. of grain, the seed not having been pickled, produced 81 smutted ears. Sulphate of copper gave poor results—94 smutted ears for 3,360 lbs. of grain. This, in fact, showed no prevention at all. Urine, as far as the proportion of bad ears goes, gave the best results; but the prevention was worse than the disease, as it killed ⅔rds of the seed right off, and gave a miserable crop. Salt showed 65 bad ears to 5,322 lbs. of grain. The experiments, however, brought into prominence a remarkable fact—that whereas all the experimental plots, even those unpickled, were practically free from smut, the crops of the neighbourhood suffered badly. Mr. Stormont is endeavouring to ascertain whether the result was not due to the fact that the seed of all the plots had been produced from seed pickled for the previous sowing. Mr. Stormont is practically convinced of the merit of pickling, and has all the farm jowári protected by a treatment with carbolic acid before sowing. His recipé is as follows:—

> Spread the grain evenly about two fingers deep over a hard floor, or piece of cloth; then for each bushel or 60 pounds of seed, well mix one fluid ounce of the acid in a quart (½ sher) of cold water and sprinkle over the grain, which should be well stirred to make the distribution even and effective; it is then ready for sowing at once. The price of a 16-ounce bottle of the acid is Rs. 1-4-0, so that the cost of preparing seed enough for an acre is only 1¼ pies.

I recommend its trial by those who have practically experienced the damage done to jowári by smut, and trust that those who do give the pickle a fair trial will report their success or otherwise to me direct.

Double Cropping.

(Bhadgaon.)

48. The continuance of bad cotton seasons demands that the farm should experiment with protective make-shifts. The local custom is to sow cotton wherever possible, and, if the season turns out badly, to uproot it and substitute a millet which can be sown later, or take a *rabi* crop. Mr. Stormont has usually modified this custom by leaving the poor cotton and intersowing it with lines of gram in the *rabi* season. This year he chose a field of poor cotton. He divided a part into 9 equal plots. In three he left the cotton to yield what it would. Adjoining each of these three he ploughed up the cotton and sowed gram, wheat and linseed respectively. Again, adjoining these he left the poor cotton, and sowed the same three crops in lines between the rows of cotton. The results were as follows :—

Linseed intersown among the cotton gave the best result, a clear profit of Rs. 2¼ per acre after charging cost of cultivation and assessment. Gram came next similarly intersown, with a net profit of Re. 1. In all other plots there was loss. With cotton alone the loss varied from Rs. 2½ to Rs. 4. Gram, wheat, and linseed, sown where the cotton had been uprooted, showed a loss of Rs. 7, Rs. 3 and Re. 1 respectively; while cotton with wheat intersown also showed a loss of Rs. 4. The loss so shown must not be considered as a necessary loss in all cases to the native cultivator, for the cost of cultivation, as I have continually to report, is necessarily higher on a Government farm than in ordinary farming. In spite of the shown superiority of linseed with cotton, Mr. Stormont sums up as follows :—

> The relative values of the three principal *rabi* crops for purposes of interculture with cotton may thus be summed up :—(1) *Wheat*, besides being a strong growing plant, choking the cotton and being spoiled by it, in return is also very liable to damage during final picking of cotton and removal of the plant; (2) *linseed*, being particularly susceptible to damage from both shade and insufficient moisture, is not altogether safe ; (3) *gram* with its creeping habit and comparative indifference to shade will usually succeed fairly well under all sorts of conditions, and is, therefore, the best for the purpose.

I agree that the success of linseed was perhaps fortuitous, for it is excessively delicate. At any rate, Mr. Stormont shows that interculture with *rabi* crops is more paying than the local plan of ploughing up the cotton altogether.

Seeding Experiment.

49. Thin and thick sowing. Linseed and gram were sown at various rates with the object of testing the correctness of local empirical custom.

Linseed.—Local rate 12 lbs., but a seeding of 14 lbs. gave slightly better results; while plots sown at the rate of 8 and 10 lbs. were far behind-hand.

Gram.—Local rate 40 lbs., which seeding gave a better crop than heavier rates of 50 and 60 lbs., and than lighter sowing at 30 lbs.

In the case of linseed, rust, or a disease resembling it, called bandára, disturbed the experiment, which, however, is of a useful character and extensible to the other staple crops, for in all cases it is desirable that local practice should be made to stand the test of experiment.

Best Cotton for the Farm (Bhadgaon).

50. The cottons grown are (1) the acclimatized Dhárwár-American, (2) the Hinghangháti from the Berárs, (3) the Varádi, or indigenous Khándesh cotton. A fourth, Nankin, has been experimentally cultivated, though for reasons detailed last year is neither profitable nor desirable.

A direct trial in adjacent plots showed a yield of seed-cotton as high as 532 lbs. with the Varádi, and as low as 175 lbs. with the Nankin per acre. Both plots had been equally and liberally manured for the previous crop. The best field of the Dhárwár-American gave 225 lbs. Hinghangháti yielded 175 lbs.

The comparison between the results on large fields and those on small plots is perhaps hardly fair, and so a careful trial is now in progress—on experimental plots—which will give results on which generalizations will be sound.

Seed Selection.

(Haidarabad.)

51. Mr. Strachan has carried on these experiments in spite of the oft-repeated fact that his farm is hardly yet even enough for comparative experiment.

Cotton.—On the average the produce from selected seed (1,730 lbs. per acre) showed a great superiority over that of unselected seed (1,205 lbs.), but in one of the duplicate plots the unselected seed was actually better than the other.

The outturn of clean cotton was 37 per cent. in the produce of selected seed, or 1 per cent. higher than that of the unselected seed.

In price the former showed important superiority, being valued by the Chamber of Commerce, Karáchi, at Re. 1 to Rs. 1¼ more than the then average of Sind cotton, while the produce of unselected seed was valued at only 8 annas more. As regards the former, it was said that very few bales equal to it had been received, and even the cleanliness of the latter placed it on an equality with the best bales received. With these results Mr. Strachan must be well satisfied, and Government will be pleased to learn that almost, if not all cotton cultivators in the neighbourhood bought selected seed for sowing from the farm —an example which a zamindár, whom Mr. Strachan met on his tour, followed both as regards selected cotton and selected bájri seed.

At the Bhadgaon Farm, attention is paid to selection of seed, though it has not been made the subject of direct experiment. It has gained appreciation in the neighbourhood, and the greater part of the farm produce is disposed of for sowing—as it should be.

Bájri.—Three duplicate plots are sown with seed of three kinds selected in 1876-77, and the selection is made yearly from the best spikes in the three—each variety being kept distinct. Year by year a further selection is made indiscriminately from the three; and there are standard plots sown with seed bought in the bázár. The yield taken as the average of duplicate plots is tabulated thus: —

Varieties.	1882-83 Grain.	1883-84 Grain.	1884-85 Grain.	1885-86 Grain.
No. I selected ...	1,171	1,527	922	1,710
„ III „ ...	1,258	1,282	947	2,308
„ IV „ ...	1,389	1,307	995	1,574
Mixed „ ...	863	1,765	1,085	2,144
Bázár seed ...	...	...	642	1,562
Bearded bájri ...	...	1,510	815	1,615

The bearded bájri was separated in 1884-85 as an apparently different variety. With variations due to season, the improvement continues. The mixed-selected in 1882-83 was pilfered on the threshing floor, but on the whole it seems best. In the last two years the average of the selected plots showed a superiority of 300 lbs. grain per acre over the bázár seed. Selection of seed is very easy. In the case of cotton it only requires that the farmer should pick out in the field, at the best picking, good pods from the very best plants, and keep them for seed. In the case of bájri it is an easier matter even, for the farmer can on the threshing floor select the finest and best shaped spikes, and from these he can, after separating the grain, sift it till the largest grains only remain. I know that selection is not common among the natives, though there are exceptions. But even among well-to-do cultivators the tendency to trust to the Bunniah for seed is a great deal too common.

The Nadiád Farm Committee has recognized this deficiency in native cultivation, and has sought to induce a preference for selected seed, by purchasing

seed of various staples and then by retailing it at cost price, or even less. This laudable action will be noticed further on.

In Dhárwár, as noticed in para. 74 of last year's Report, an attempt was made to secure selection of seed by distributing seed taken from 5-celled pods. The results were not very satisfactory, both because there was no proof that the seed was sown as received, and because accurate figures were not available. I doubted this mode of selection. It has been tested at Haidarabad. Seed from 3, 4 and 5-celled pods was separately sown. The result was :—

Kind of Seed.	Percentage of Pods in Outturn.		
	3-celled.	4-celled.	5-celled.
3-celled pods	24	71	5
4 „ „	9	77	14
5 „ „	4	69	27

Comment is reserved till further trial. The weight per acre of crop is an element not to be overlooked, and Mr. Strachan has been requested to add this detail in his next return. Some corroboration at any rate is afforded by the experiment to the mode of selection. There is no reason why it should not be observed in conjunction with the suggestions for selection above given.

Miscellaneous Experiments.

Linseed grown for flax (Haidarabad).

52. American seed was sown. The best stems were only 2 feet long. The fibre was weak. Though the plant did not branch much, the experiment does not promise success.

Introduction of shálu or hot-weather jowári (Bhadgaon).

53. This variety of sorghum is much valued in the Deccan—giving green fodder in the hot season. It is little known in Khándesh. Hence the trial. The result was very favourable. A crop of 4½ tons per acre of green fodder was cut on the 8th March, worth Rs. 17 and costing only Rs. 7. "It is much to be desired," says Mr. Stormont, "in the interests of the working cattle, that the cultivation of this hardy sorghum for fodder should become more general." It requires irrigation of course.

Trials with imported seeds.

54. I received seeds from Messrs. Praschkauer & Co., of London, last year for trial. Mr. Praschkauer himself came to India. His main object was to learn by personal enquiry whether a profitable export cannot be created in minor products, for which the demand, though limited, is yet considerable.

He brought a few samples of green field peas, green, white and black beans, lentils, mustard and gram; and small millets. These have all been experimented with on the farms, and also on private land in various parts of the Presidency.

(1) *Field peas.*—At Bhadgaon the peas were sown on well-manured land. They germinated strongly, grew well, and flowered in two months. A check was caused by cold in January, and the crop thus weakened was damaged by caterpillars. The outturn was, however, good. At Haidarabad, frost caused injury, but the peas were judged to be good and suited to the locality. In plumpness the pea was the best of seven varieties tried. I caused some to be sown in the Mával—a moist tract above the ghâts near Poona, where a poor variety of field pea, useless for export, is grown. In rice land the seeds did not germinate. In garden land they grew well, but were destroyed by caterpillars. The same fate befel sowings in garden land near Dhárwár. Further trials will be made, but the main object must be to improve the variety of pea grown as a late crop after rice.

(2) *Beans.*—The green and black varieties did well nowhere, but the white kind proved a great success. It is very similar to the large-fruited

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dolichos—dolichos lablab—which goes under the names of *ghevda*, *vál*, *pávte* and *ávre* in the various parts of the Presidency. These are local names, and may be names of the same variety; but the seed received, is styled "*ghevda*" by the people. Ráo Bahádur Y. M. Kelkar says that the black variety is known, but not liked. He grew the white kind near Dhárwár. The crop was very good, but it was preferred as a green vegetable. The pods were larger than the common *ghevda*, and were much appreciated on account of superior taste and sweetness. Khán Bahádur Dorábji Padamji gave a very similar opinion from Poona. Full success was obtained at Bhadgaon and at Haidarabad. At the latter place the December sowings did best. The crop was unfortunately eaten by goats. In Junnar and Mával—moist parts of the Poona District—the crop is reported to have failed. Mr. Mudliar sowed all three kinds at Poona. He secured two pickings of both the green and the white kinds. I intend to apply for a considerable quantity of the white variety. It will grow where the *ghevda* succeeds, and is clearly proved superior. An improved vegetable is of no small value.

(3). *Lentils* did not do well. Our indigenous variety is good.

(4). *Gram.*—It turned out that the white kind of gram is identical with what is known as Kábuli gram, which is grown in the Nagar District.

(5). *Mustard.*—The crop was strong at Bhadgaon till destroyed by caterpillars. It grew excessively to leaf at Haidarabad and gave a poor crop. At the College of Science Farm, Poona, it did not yield seed. Mr. Kelkar near Dhárwár reports that the plants grew well for six weeks and then died off, which showed that the seed should either be sown earlier or in a moister soil than is usually chosen for indigenous varieties.

(6). *The small millets*, which are very similar to the indigenous *varai* and *sáwa*, Panicum miliaceum and Panicum miliare, though larger and more suited to an export demand, succeeded nowhere. They were tried in land usually sown with *varai* and *sáwa*, *i.e.*, uplands in very moist tracts in the Konkan, but either did not germinate or else came up very miserably. I tried *varai* or rather the seed resembling *varai*—called the long millet by Mr. Praschkauer—with *ráb*, *i.e.*, by sowing the seed on a seed-bed on which cowdung and grass had been burnt slowly, but it did not germinate. The want of success may be due to my having had to keep the seed nearly nine months, but it kept well apparently.

Messrs. Praschkauer & Co. have received detailed reports as to the results of the trials. I believe that seed was distributed in other Presidencies, but I have seen no reported results. A letter just received is added as an Appendix (B.)

55. *Australian oats* were again tried at Bhadgaon with irrigation, but though not harvested till the 7th May were not fully ripe. The climate appears too hot for them.

56. *Sorgho* (Bhadgaon) was grown in small plots to separate varieties for future growing. Mr. Stormont states that the Chinese sorghum or black jowári, and the ambercane, "a sport from the Chinese variety developed in America," are by far the best sugar-producers. Others are good fodder crops. The object is, however, to try to develop the sugar-producers. An evaporator was obtained from Cawnpur, made on an American muster, and others have been made up on the farm for trial this year. A trained apprentice has arrived from Cawnpur, and the sugar-producing qualities of the black jowári are now being tested. It is worth a good deal of expense and trouble to carry the experiment to successful issue. Sugarcane is a crop which holds the ground twelve months. Sorgho grows quickly and is far less expensive.

57. At Haidarabad, Mr. Strachan has continued his trials with carrots, mangolds, beet, peas and potatoes. The early Dutch Horn variety of carrots and the Telephon pea most commend themselves. Mangolds provide very suitable hot-weather food for cattle. The measure of success obtained justifies

further trial. The natives do not like beet-root. Success with potatoes appears as far off as ever. I supplied the best Poona tubers I could get, and some seed-potatoes were obtained from the Mulleer near Karáchi. Both did miserably.

There are still some important experimental results to be noticed under the head "Indigenous and Exotic Products" treated separately from the review of the working of the farms; but before I take them up I desire to place on record a short account of the Nadiád Farm.

The Nadia'd Farm.

58. As noticed last year, this is a private institution, managed by a committee of practical agriculturists, who are desirous of furthering improvement in practice. They have spent a large sum in converting an uneven, low-lying, camping ground into a plot suitable for experiment. The Association has sent students for instruction to Saidápet—an example imitated by a considerable number of youths in Gujarát. It has instituted an agricultural show, which is held once in two years. The show of 1884-85 was a great success, and for that to be held next January over Rs. 6,000 are available without any subscription from Government.

It has established through the Educational Department an agricultural class at the High School, the students having the fullest opportunities of watching the operation of the farm. The leading spirit is the President, Mr. Behechardás Veháridás, who has done conspicuously important work in the improved cultivation of tobacco and in curing the leaf for the European market. Its income is derived chiefly from an agricultural pamphlet largely circulated throughout Gujarát.

An important change in the relations between the Association and Government has lately taken place. The land of the farm (12 acres) has been granted free of assessment, and water-rate, as long as it is used as an experimental farm for the furtherance of agricultural improvement. Another condition has been imposed, *viz.*, that the forms showing the cultivation of each plot and the results of the cropping, which are prescribed for Government farms, shall be kept up. This, without in the least encroaching on the independence of the Association, will provide such a record of experimental results as will be instructive to the general public, and will aid agricultural enquiry. The Association has readily entrusted the preparation of the "Cultivation Book" to the Teacher of the Agricultural Class of the High School. Till this book is kept up, I cannot review the record of the work of the farm.

The Association has established a shop for selling selected seed. It is unquestionable that agricultural seedsmen would, if established all over the country, confer immense benefit. The object of the Committee is to create an appreciation for good seed. It has purchased a considerable quantity of bájri, rice, wheat, and kodra—all staple crops—of the tract, obtaining its supply from even distant places noted for the excellence of one or other of the selected products, and has sold the seed at or below cost price. As yet experience is proving that much prejudice and ignorance have to be overcome; but the attempt is in the right direction, the success of which is probable when the management is in private hands, but not possible with Government agency.

B.—Experiments on various Indigenous and Exotic Products.

1. Wheat.

59. The general distribution of hand-picked selected seed of selected varieties in chief demand in the export market has, as stated last year, been held in abeyance, because

(1). Hand-picking is very costly.

(2). Wheat is excessively liable to weevil.

(3). The colour and consistency of the grain are very variable.

(4). The seed does not do well in the first year of change.

Hand-picking must be left to the sowers. It does not repay its cost otherwise. The liability to weevil may be got over by care, provided the colour and consistency can be maintained, and provided the distribution improves outturn. I have instituted careful experiments on these points, but before giving the figures of the year I must notice a considerable distribution made, as stated last year, with the double object of giving the cultivators seed where the previous crop had nearly failed, and at the same time good selected seed.

Distribution of seed wheat in Bijápur and Belgaum.

60. In both these districts, the crop of 1884-85 had been very bad. The local wheat is a hard red grown as a dry crop, similar to that grown in Dhárwár, where the crop in places was good. I collected nearly 10 tons of the best Dhárwár wheat and caused it to be conveyed to the tálukás of Athni and Parasgad in Belgaum and of Bijápur and Hungund in Bijápur *before the rains* (one cause of previous failure arose from distribution *in* the rains), and there stored in the best known local method, to be kept till sowing time and then to be ready for distribution at a short distance from the fields where it would be sown. These precautions were to prevent damage from weevil. The precautions were not quite sufficient, for some damage by weevil is reported :—

Táluka.	Villages.	Area sown.	Rate.	Cost of Distribution.			Receipts.
				Seed.	Carriage and Storage.	Total.	
		Acres.	Lbs.	Rs. a. p.	Rs. a. p.	Rs. a. p.	Rs. a. p
Parasgad	15	242	25	151 3 2	28 12 10	180 0 0	141 11 5
Athni	6	209	27	151 3 3	62 9 9	213 13 0	155 0 0
Bijápur	7	156	28	114 0 6	40 14 0	154 14 6	114 11 7
Hungund	12	269	17	117 9 7	43 4 3	160 13 10	117 4 2
Total ...	40	876	24	534 0 6	175 8 10	709 9 4	528 11 2

In the Belgaum District the seed was all sold to selected cultivators at rates varying from 38 to 42 lbs. per rupee, on condition that the price should be paid on the harvest. In Bijápur it was also all sold at the current rate of 38 lbs. for cash. The only loss is the cost of carriage and storage, which was not large.

61. The results were not satisfactory. The yield was no better in Belgaum than that obtained with other seed, and the cultivators have only in a few instances shown even enough appreciation to induce them to keep seed for the next sowing. In Bijápur itself the crop was damaged by rust, and is reported to have done very badly. In Hungund it gave only an 8-anna crop, *i. e.*, a crop no better than that from ordinary seed. It is quite possible that the results were really better than they are reported to have been. The people are very loth to admit success, and perhaps expected too much. No accurate figures are of course available. Those reported are based on verbal statements, which are not sufficiently trustworthy for reproduction here. But the net result is still further discouraging to this mode of attempting improvement, though weevil was avoided nearly, and though the risk of failure from sowing seed of different colour and consistency from that indigenous to the tracts selected, was not run.

Distribution in the Rámdurg State.

62. In 1884-85 the distribution of seed wheat extended to several Native States. In Rámdurg of the Southern Marátha Country the result was poor, owing to weevils and rust and bad season. But seed was kept from the poor yields and sown in 1885-86. The report is favourable. The yield is better than of the local wheats, in one case being 8 fold. But the change of seed did not take with it any immunity from rust.

Distribution in Surat.

63. Last year some success was reported, for a spontaneous demand for the soft white from the Central Provinces arose from the results of previous distribution. The wheat of the tract (Olpád) is hard white. The success was not repeated, for reports affirm that the indigenous wheat was superior,

64. One-fourth of the sum allotted for improvement of wheat has been placed at the disposal of the Commissioner in Sind. In the first year (1884-85) all expenditure was confined to the distribution of varieties commanding the best price in the export market. Seed was obtained, through the Karáchi Chamber of Commerce, of soft wheat, white and red. Distribution was made in the three principal wheat districts :—

Distribution in Sind.

District.	Amount distributed.		Cost including carriage.	Area sown.	Rate on the average.
	Soft white.	Soft red.			
	Tons.	Tons.	Rs.	Acres.	Lbs.
Shikárpur	5½	...	574	85	139
Thar and Párkar	4	...	585	59	149
Upper Sind Frontier	1¾	1 1/10	427	71	91
Total ...	11 1/12	1 1/10	1,586	215	126

I have little trustworthy information on record regarding wheat cultivation in Sind, and the reports do not show what are the characteristics of the local varieties in the selected tracts. The imported seed in Shikárpur yielded only 2½ fold, and was, therefore, practically a failure. Unsuitability of seed and rust and insufficiency of irrigation water in parts are reported as causes. With the sanction of Government the cost of the seed was not recovered. In Thar and Párkar, in spite of adverse circumstances (late sowing and failure, in part, of the water-supply), the results were sufficiently encouraging to induce a demand for a further supply for the next season. The outturn is reported to have been on the average 3 fold. But in places there was total loss by rats and in others damage by blight. Where these disturbing elements were absent, the yield was very good. The Chamber of Commerce considered that the samples of produce of the soft white were fully equal to the best Ekdáni of Bombay, *i. e.* the finest quality. In order to encourage the cultivation, the growers were permitted to keep the seed without charge for future sowing.

In Upper Sind Frontier, the yield was disappointing, though some samples were classed very high.

The Commissioner decided to allot no money in 1885-86 for the Upper Sind Frontier District. The available sanction (Rs. 1,200) was distributed as follows :—

	Rs.
Thar and Párkar	500
Karáchi	440
Shikárpur	260
Total ...	1,200

The results of the distribution of 1885-86 are not yet reported. It is believed that the advice of the Chamber of Commerce and myself, that care should be taken to purchase seed similar in colour and consistency to that of the selected tracts, has been followed. The best specimens of Sind wheat which I have seen are very excellent, and it is a question whether outside seed is at all wanted.

It was, however, decided to experiment with seed (soft white) from Muzaffarnagar chiefly on account of its alleged power of resisting attacks of rust, to which all the delta wheats of Sind are excessively liable. The indent for the Shikárpur District, at all events, has been countermanded, in order to make the money available for an experiment with the steam thresher (para. 69). Thus in Sind, as in Bombay, the tide of opinion is turning against the advisability of distribution of seed.

65. *Experimental Results at the Farms.*—As regards permanency of colour and consistency and benefit of change of seed.

Bhadgaon.—In 1884-85, hand-picked seed of hard red, hard white, soft red and soft white, selected by Messrs. Ralli Brothers on behalf of the Chamber of Commerce, were sown both dry and with irrigation. The soft white was obtained

from Jabalpur. The soft red from Akola, Ahmadabad and Jabalpur. The hard white came from the Hánsot Táluka of Broach. I do not know whence the hard red was procured. The local wheats are hard red in dry crop and hard white in irrigated land. The seed sown the second year was the produce of the previous crop. Hard white irrigated gave the best crop of all (797 lbs. grain and 2,465 lbs. straw), beating the local hard white by 142 lbs. grain and 1,270 lbs. straw. Hard red dry (513 lbs. grain and 1,700 lbs. straw) also beat the local hard red by 100 lbs. grain and 580 lbs. straw. In neither of these can the results of the first year be recorded, because the rate of seeding was not the same. Still the general result of the first year was considerable superiority in favour of the local kinds—a result now reversed.

Of the outside wheats, soft white and soft red, neither variety being similar in consistency to those indigenous, did remarkably well. The figures must be quoted in full:—

Variety.	1884-85.		1885-86.	
	Grain. Lbs.	Straw. Lbs.	Grain. Lbs.	Straw. Lbs.
Soft white (Irrigated) ...	565	1,505	788	1,058
Do. (Dry) ...	458	2,835	730	2,120
Soft red (Irrigated) ...	572	2,585	772	3,516
Do. (Dry) ...	287	1,535	625	2,000

The improvement on last year is very marked, and the yields are very high for the season even compared with the best local kinds. The increase in the proportion between straw and grain is due solely to season—an accident. The increase in yield of the soft kinds shows an adaptability to change of locality. There are two circumstances, however, which make it yet doubtful whether general distribution of these kinds is advisable—a distribution which, if successful, would be a substitution of wheats *more* for those *less* suited for export, and these are :—

1. That the crop in the first year is poor decidedly below average of the local kinds. It will be immensely difficult to induce rayats to take the risk of immediate loss for prospective gain;

2. and that the tendency to hardening is clearly shown. Mr. Stormont declares that the soft white would now be classed as a medium hard. In the case of soft red this tendency, though observable, is neither so marked nor so rapid.

Mr. Stormont sums up as follows :—

> The teaching of the experiment, then, so far as it goes, seems to be that the substitution in any district of one distinct character of wheat for another (such as a soft for a hard) is not easy of accomplishment, if indeed possible; also that occasional changes of seed, if not too extreme, are particularly beneficial, especially in maintaining a high quality of grain.

The bushel weights of the crops grown from the produce of imported seed showed considerable increase—a satisfactory result, judged by Mr. Stormont to be an evidence of the benefit derived from change of soil. But the increase is not satisfactorily established. I tested the bushel weight of samples received by the chondrometer. In cases the test corroborated the entries made after measuring with a half-bushel measure. Mr. Stormont then remeasured the various kinds. A few instances are given :—

Variety.	Result of Tests.		
	Shortly after reaping.	Thoroughly dry.	By chondrometer.
	Lbs.	Lbs.	Lbs.
Soft white.	64	60½	63½
Soft red.	66½	62	66
Hard white...	63	60	62½
Hard red	65	60	63

The Superintendent claims that correct results cannot be obtained by the use of the half-bushel measure. Differences also arise from the manner in which the measure is filled, and, as appears from the figures above, from the time at which the test is taken. Dryage reduces the bushel weight. Mr. Stormont has been authorised to procure a bushel measure direct from England, suitable for securing correct results.

At Haidarabad similar sowings were made in both years. The hard wheats were rusted to such an extent as to defy identification, while the soft kinds and the local wheats escaped almost entirely. These last are mostly soft. The outturn of the various kinds was not recorded, as Mr. Strachan supposed that the object of the experiment was to test permanency of colour and consistency only. On these points from samples received it was not possible to detect in the soft kinds any alteration in colour. None in consistency was likely, because the local kinds are soft. In the last season (1885-86) Mr. Strachan repeated the experiment. I may mention that I had added to the varieties obtained from Messrs. Ralli Brothers a hard white called Bakshi in Bombay grown as an irrigated crop, of excellent character, but little cultivated on account of liability to rust. New seed of the hard kinds was supplied, owing to the injury by rust in the former year. The results were much more satisfactory, though the Bombay kinds again suffered from rust. The Bakshi wheat was highly approved by the local traders. Mr. Strachan thinks that it will take a season or two more to acclimatize the new varieties.

Trials with Foreign Wheats.

66. The fresh trials of the year were with the fine soft white South Australian wheats, which came too late for sowing last year (Report, para. 64). The seed was kept well and sown sound.

At Bhadgaon only one variety, the "Tuscan," seeded, and that gave only a nominal yield—20 lbs. per acre. All the kinds were tried on the best wheat land, well manured, and both with and without irrigation.

At Haidarabad the "White Essex" gave a crop of 615 lbs. an acre. "Tuscan" and "Purple straw" 385 and 375 lbs. respectively; "Ashby's Prolific" only 65. All suffered from rust. The best yield was very light compared with the best local variety "Thori," also a soft white, which in one plot yielded 1,655 lbs. to the acre. "Ashby's Prolific" exhibited its characteristic, in that 9 shoots were counted all springing from one seed, which gave 4,650 grains. These wheats are likely to do well in Sind with earlier sowing. They are similar in colour and consistency to the local kinds, but must be acclimatized.

At Poona all were ruined by rust. Only the "White Essex" flowered. Mr. Woodrow considers this an illustration of heredity, for the local wheats resisted attacks of the parasite.

67. The failure with English pedigree seed, sent out by Messrs. Oakshott & Co., was reported last year. This firm was dissatisfied with the trials. The Secretary of State, passing over the abuse of the Indian wheat and the uncalled for allegation of opposition and insufficient supervision made by this particular firm, has nevertheless directed further trial and sent fresh seed. This has been distributed among the experimental farms. It remains to be seen whether better success will be secured. My conviction is that improvement in wheat is more likely to be effected by education of indigenous varieties than by importation of seed, pedigreed to suit different conditions from those with which we have to deal in India. I have not seen reason to depart from the conclusion drawn in last Report (para. 65).

Wheat Hay.

68. The importation, during the late Egyptian expedition, of wheat hay from Australia suggested an experiment as regards the value of growing the wheat and manufacturing the hay locally. The success attained on the cultivation was fully reported last year. It only remains to describe the trials made with the pressed hay made over to the Commissariat Department. Eight tons were fed to battery horses and 17 tons to pack mules of the transport service. The

animals were kept on the hay, without any other food, for a month, with the result that there was a general falling off in condition. It was considered conclusively proved that the hay cannot be substituted for the ordinary rations.

The cost of the stuff came to Rs. 689, or Rs. 12 per 1,000 lbs. The savings in ordinary grain and forage rations amounted to Rs. 571. The loss was, therefore, Rs. 118. About 6 tons, however, appear to have been used as bedding. I concur with the opinion on the general merit of the trial expressed by Mr. Stormont, who grew the wheat and made the hay. "Wheat straw is the most innutritious of all field fodders. Besides, in this country, the finer kinds require artificial irrigation to secure a bulky crop, and under these drawbacks as a fodder have to compete with the ample list of sorghums, all of which are easily cultivated, and are more or less saccharine. Some of the cold-weather sorghums with strawy stems would probably make an excellent quality of hay prepared in the manner of the Australian wheat hay."

As indicated last year (Report, para. 64) a portion of the Australian beardless wheat was left to seed. The seed was sown in 2 acres of irrigated land, but the yield was indifferent, though the quality of the grain was much improved. It is noticeable that the beardless wheat showed a tendency to develop awns, which all local varieties possess.

Steam Wheat Thresher.

69. Seeing that improvement in wheat appears improbable by means of distribution of selected seed, and that the charges against the rayat of sowing hard and soft kinds and wheats of different colours together and charges as to the admixture of foreign seeds have been practically disproved, I have turned attention to improved methods of preparing the crop for market. Defective dressing resulting in admixture of dirt is clearly substantiated. The circumstances under which I am now attempting to introduce steam machinery to thresh and clean the crop have been detailed in former reports.

During the past season the progress made is decidedly encouraging. Messrs. Marshall, Sons & Co., of Gainsborough, have brought out an improved machine altered in the light of experience gained in the previous trials. The new thresher is a success. The straw is thoroughly bruised. Government has permitted me to purchase a thresher and an engine costing, landed at the Bhadgaon Farm, Rs. 5,507 from the annual allotment of Rs. 10,000 for wheat improvement. Experiments made show that the machine works well with gram and linseed as with wheat. A representative of the manufacturing firm has come to India to stay, at any rate one year, to foster the project. Local agents have been appointed—Mr. L. K. B. Macbeth for Bombay and Messrs. Mackenzie & Co. for Karáchi. The representative of Messrs. Marshall, Sons & Co., Mr. Harper, has arranged for further and more extensive trials next season. One of the most interesting will be made at Shikárpur, in Sind, at the annual show to be held in January. Here the Punjab authorities will have an opportunity of seeing the machine. An invitation has also been received from Nágpur, which will, no doubt, be responded to. Meanwhile Mr. Stormont will work his machine in the rich wheat tracts of Khándesh.

I believe that it is highly probable that a company will be soon formed to import machines and work them for hire. This is, to my mind, the best possible system, though when it has become more general, zamíndárs in Sind and Native States in Káthiáwár and elsewhere may be able to purchase and work machines on their own account.

There is abundant evidence that though the dirtiness of Indian wheat is admittedly the principal reason why it does not secure a market suitable to its merits, it will be no easy matter to secure a fairly enhanced price for clean wheat, owing to the difficulty of securing the co-operation of the traders in wheat, who are wedded to the long-established custom of allowing a refraction varying from 2½ to 5 per cent. on account of dirt. In a special report published by the Agricultural Department, Bengal, some strong facts bearing on this subject have been recorded, which fully bear out the fact that the trade is not yet ready to make any sacrifice or to take any special steps to eliminate or

diminish the refraction, which rude methods and the once small importance of the wheat trade established.

There are, however, hopes of better things. One large wheat firm has undertaken to ship all the clean wheat that Mr. Stormont can send them with the object of securing a special quotation for steam-threshed wheat, and the largest miller in Bombay is ready to take all the soft wheat that we can prepare at a proper price. Unfortunately Bombay wheats are hard. The trial in Nágpur may supply the demand, which in the interests of the project it is very desirable to meet.

Wheat Trade.

70. A statement showing the course of trade during the last six years and for the eight months of the present year is appended (C.) from which the growing expansion of the wheat trade of the Bombay Presidency will be apparent. The lower rate of exchange, the fall in the freight charges (Appendix D.), and a better harvest of the last season have led to a brisker trade in wheat during the first six months of 1886 compared with the same period of 1885. Till lately, Russia was second to the United States as a wheat-supplier to Great Britain. This position she has lost. The returns of the Customs Department of Great Britain for the first seven months of 1885 and 1886 show a falling off of more than 50 per cent in the imports of Russian wheat. The imports of Indian wheat, on the other hand, show an increase of 6 per cent; in fact, during the first seven months of 1886, India supplied Great Britain with more than twice as much wheat as Russia. There has also been a considerable falling off in the imports from the United States, which tends to show that India has been able to increase her sales of wheat in the English market. This will be apparent from the following statement :—

Imports of Wheat into Great Britain.

Source of Supply.	1885. (First 7 months.)	1886. (First 7 months.)
	Cwts.	Cwts.
Russia	5,113,600	2,151,296
India	4,317,158	4,579,080
Atlantic ports ...	6,369,086	5,211,826
Pacific ports ...	9,671,305	6,654,436

There is prospect of a wheat trade with Australia also. I give extracts from an article which appeared on 14th August in the *Queenslander* :—

> The importation of wheat from India to these colonies is one of the consequences—one of the necessary consequences, it might almost be said—of the establishment of regular steam communication between India and Australia. By advices that have been received we learn that two of the vessels now expected are bringing 500 tons each, half for Hobart, and the balance for Adelaide, Sydney and Brisbane, while freight-room for 1,000 tons more had been secured in boats to follow shortly. The opening of this trade is a matter of the highest meaning to these colonies, but it does not affect all of them in the same way. New South Wales and Queensland are poor wheat-producers, not because that cereal will not grow readily in these two provinces, but from a variety of causes which lead to the investment of capital in other and presumably more generally profitable pursuits. They, therefore, are largely dependent upon their neighbours for the flour they consume; and even Tasmania, in spite of the productiveness of her rich agricultural lands, is in a similar position, for in that colony the business of agriculture has largely given place to that of stock-raising. In South Australia and Victoria, on the other hand, the production of wheat is much larger than the local consumption, and from these the short-producing colonies have hitherto derived their supplies; nay, more, they have even aspired to meet the wants of the people of England, and during the last few years have shipped many thousand bushels to the home

market. So far as they are concerned, therefore, India, whose trade has been so eagerly looked for, has suddenly appeared in the character of a powerful and dangerous competitor. * * * * * * *

The success of the Indian venture seems to mean the destruction of the wheat industry in South Australia; for, although by a repressive tariff Indian grain may be excluded from her own territories, the two will have to meet as competitors in an open market elsewhere. Everything depends upon the price at which Indian wheat may be landed in the colonies and its suitableness as a flour-producing grain. As to price, it is said that the Indian wheat can be put upon the market at 3s. per bushel, while Adelaide quotations just now are 4s. 8*d.f.o.b.*at Port Augusta; so far as price is concerned, if these quotations are correct, the farmers' price will have to be cut down to an extremely low rate to enable the Adelaide miller to compete with the Indian trader. It is urged, however, that the Indian grain is of a peculiar character and requires an admixture of other kinds to produce a marketable flour such as is required here; but, even if this be so, all that it means is that the competition will not be absolutely but only partially disastrous—a poor consolation surely. So far as India's capacity for supplying Australian demands is concerned, it is quite unnecessary to go into detail. She has an immense wheat territory, and as railways are pushed into the interior, thousands of acres of new wheat lands are brought within reach of the coast; the soil is productive, and labour is extremely cheap, and, in short, India is the great competitor whose operations checked the increase of wheat culture in the United States and marked the limits beyond which it ceased to be profitable. It is no novice that is offering us this trade, but one of the giants amongst wheat-growing countries.

It is interesting to watch the progress of wheat export from the hitherto untapped districts of Dhárwár, Bijápur and Belgaum. In the first eight months of the year, 12,246 tons were conveyed by the Southern Marátha Railway to Bombay. During the same period, imports by sea were only 780 tons. Wheat suffers more from keeping than cotton. The coast ports are closed in the monsoon, and though the wheat crop is ready for the market sometimes before the closure of the ports, the traffic by rail was very brisk throughout June, July and August. The wheat of this tract is all hard red—not preferred for export, but of fine characteristics, which will give it a ready market where hard wheat is in demand.

2. Cotton.

71. I have very little to place on record respecting this important staple. No further movement has taken place in the direction of check against admixture, and I have no district agency to record the damage done by carting seed cotton from districts, where the staple is bad, but the colour good and the cotton cheap, to be ginned with superior cotton. That this admixture goes on I have no doubt, and it is certain that the mixed seed is sown in the localities where the ginning is done to the great detriment of the crop. One circumstance, however, is worthy of note. The Liverpool Chamber of Commerce has established a new standard which will be known as *Bilati*. It will include the short-stapled *Umras*, and will apparently be a direct check against the export of the short-stapled *Varudi* as it is called in Khándesh, or *Khandeshi* as the Berár people chose to denote it, under the standard of *Umras*. It remains to be seen from the quotations and trade returns the price which the new standard will command and the proportion it holds to the whole crop.

72. *The saw-gin.*—I am glad to report that the Haliyál saw-gins are now worked by steam instead of by bullock power (last Report, para. 79). This is, however, the only place in the whole Presidency, except the two Government farms, where the steam saw-gin is used to clean cotton. No change has taken place regarding the manufacture, repair and distribution of hand saw-gins in Dhárwár, described in para. 77 of last Report.

At Bhadgaon, now that Mr. Stormont has a steam engine, he will work saw-gins to clean the farm cotton and the small amount of the Dhárwár-American still grown in the neighbourhood from farm seed. At Haidarabad an experiment with the saw-gin for cleaning the indigenous cotton has been most successful. The whole of the farm crop was ginned with the improved saw-gin sent from the Bhadgaon Farm driven by a 6-horse-power engine. Mr. Strachan reports that the cost was Rs. 1-3-1 per maund of 84 lbs. as compared with Rs. 2½ to Rs. 2¾ for the native hand *charka* The clean cotton sold for Rs. 15

per maund, while the ordinary native was selling for Rs. 13-8 The seed could have been sold for Rs. 1-10 per maund, but the price of the clean cotton alone was more than would have been got for both cotton and seed had it been sold unginned. The outturn of the gin was 18 maunds per day of 9 hours. The Karáchi Chamber reported 'saw-ginned Sind native cotton from selected seed appears to be a great success. The staple does not show any signs of having suffered from the process of ginning, and is valued at about Rs. 1½ to Rs. 2 more than the average native Tánda.' The hand-ginned samples of selected Sind cotton, *i. e.* grown from the selected seed, were valued at Re. 1 to 1¼ above the then existing average selection of Sind. It is noticed further by Mr. Strachan that the saw-gin does not crush the seed, and that the percentage of clean cotton is greater than that obtained by hand-cleaning.

Dhárwár-American seed in Bijápur.

73. Seed from Dhárwár was sent in 1883 and distributed in Bijápur. The results were unsatisfactory: one reason was that there were no saw-gins. Government ordered further experiment (Government Resolution No. 9274, dated 22nd November 1884). The conduct of the new trial was entrusted by the Collector to the District Inspector. He found much prejudice in the way. Some rayats declared that the seed of the new variety would cause temporary blindness to their cattle. This prejudice is of course perfectly gratuitous, and only an instance of the readiness with which the cultivators conjure up objections to any modification of their practice. One rayat allowed a small area of 4⅜ *gunthás* to be sown. The yield was 18 lbs. or about 175 lbs. seed cotton to the acre,—a yield which compared very favourably with that of the indigenous cotton in the same season. The kulkarni of the village, who bought the small yield of the plot, has asked for seed, and a spontaneous demand has come from other rayats. The importation of fresh seed from America may, however, enable me to meet the demand more profitably than by distributing the degenerate seed, the produce of old importation.

74. *Fresh Seed from America.*—I have carried out the plan sketched in para. 81 of last Report in all its details. The Chamber of Commerce readily gave me the assistance needed. The indent from Kolhápur and the States under the Agency was very large. Miráj Senior and Junior asked for 24 tons alone. In face of the large cost of new seed, I advised that a small amount should be distributed the first year, the whole of the seed secured, and then distributed largely. I only imported ½ ton of Boyd's Prolific Louisiana and ⅛ ton of Memphis 'Upland' and 'Allen' seed and ⅛ ton of 'Bruder' seed from Helena in Arkansas. Messrs. Ralli Brothers, who imported the seed, have given details which for future guidance are valuable. I take this opportunity of expressing my obligations to the firm for the care and interest which have been displayed :—

(1). It was decided more advisable to send the seed in bags than in hogsheads, to avoid injury from heating and to save cost.

(2). The seed was selected from October pickings rather than from the earlier crop of August or September. Seed from the middle crop was judged likely to give the best results.

(3). It was considered better to select New Orleans than Texas seed, and still better to try seed in Dhárwár from a more northern latitude than either New Orleans or Texas. Acting on this consideration, the seed, as noticed above, comes partly from Tennessee and Arkansas, and it is expected that this seed from higher latitude will mature earlier.

(4). White seed was preferred to green—a preference which the Dhárwár rayats were unanimous in insisting upon. Nevertheless the Louisiana seed appears to have a decided tinge of green.

(5). The selected seed is of an ordinary stapled rather than of a really long-stapled cotton. The length of staple made by each in its own locality is stated to be as follows :—'Upland' 1-1⅛ inch, 'Allen' 1⅛ inch, 'Bruder' 1⅛ inch. The length of Louisiana is described as good.

(6). The cost price of the Louisiana (1 dollar per bushel of 30 lbs.) was high. The others cost about half, but all the seed was seed specially selected for planting.

I have recorded these facts in detail, because the absence of a similar record of previous importations was much felt by me.

The cost of seed landed in Bombay was,—Louisiana Rs. 416, Memphis and Helena Rs. 289 per ton.

The distribution was made approximately as follows :—

Districts.	Louisiana.	Memphis.		Helena Bruder	Total.
		Upland.	Allen.		
	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.
KolhápurAgency.	682	95	50	163	990
Dhárwár... ...	358	68	34	100	560
Bhadgaon Farm .	40	10	10	10	70
Bijápur	20	...	..	...	20
Panch Maháls ...	20	7	6	7	40
Total ...	1,120	180	100	280	1,680

In the Kolhápur Agency most of the seed has been sown at about 8 to 10 lbs. per acre in Kolhápur, Sángli, Miraj Senior and Junior. It has germinated well, and early sowings are reported to be healthy and strong.

In Dhárwár very especial care was taken by Mr. Price. Villages were selected by me two years ago as having land especially suitable for the American cotton, and as having kept up its cultivation most successfully. The seed was sown partly in Mr. Price's presence and partly under the supervision of the Assistant District Inspector, and so the most careful record of the rate of seeding, kind of land, and the like will be available for deductions.

In Bhadgaon the cultivation is purely experimental. The sowings are early there, and I have already seen the produce. The seed germinated well, but the crop is very poor. The pods are large and the cotton of a good colour, length and silkiness. I did not expect the crop to be large the first year (last Report, para. 81).

In Bijápur, seed was sown by the District Inspector. That sent to the Panch Maháls was sown on Mr. Bomanji A. Dalál's farm, where its success or otherwise will be carefully recorded.

75. *Nankin Cotton.*—(Last Report, para. 105). This variety is still cultivated on the Haidarabad Farm to test the permanency of colour. The Superintendent has put forward a theory that uniformity can be secured by selection of seed from pods of any desired colour. He selected seed from 6 plants, the colour of which showed variation from a light tawny to the deepest brown. The produce was kept separate. Before it was ginned, the lighter shades appeared to have greatly changed colour, but the change disappeared in ginning, and the net result was a decided irregularity, which points to a state of transition. Desultory trials were continued at Bhadgaon and in Sholápur regarding which there is nothing to record.

Forecasts of Wheat and Cotton.

76. Forecasts were sent monthly from October to March in the case of cotton and from December to May in that of wheat. The method of obtaining the reports direct from the Mámlatdárs has answered well. Uniformity and punctuality were secured. The Native States used the forms prescribed for British districts, with slight modifications. The Baroda State submitted returns, and the forecasts were complete for the Presidency. I cannot say how far they are valuable to the trade.

77. The results may be summarized as follows ;—

A.—Cotton.

The area under cotton was :—

Province.	Average Area of previous 6 years.	1884-85. Area.	1885-86.	
			Area.	Outturn.
Gujarát.	Acres.	Acres.	Acres.	Bales.
British Districts ...	5,33,968	5,65,368	6,39,074	1,14,645
Native States ...	...	23,16,818	25,24,656	4,52,904
Deccan.				
British Districts ...	9,12,956	9,47,132	7,33,315	1,10,465
Native States ...	...	2,625	5,539	834
Karnátak.				
British Districts ...	7,79,025	7,83,444	7,59,727	1,09,000
Native States ..	...	1,56,912	1,78,322	25,584
Sind.				
British Districts ...	57,995	72,767	71,518	...
Native States ...	...	2,858	2,757	...
Total.				
British Districts ...	22,83,944	23,68,711	22,03,634	3,34,110
Native States ...	...	24,79,213	27,11,274	4,79,322
Grand Total ...	...	48,47,924	49,14,908	...

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Gujara't.—Varieties, *Dholera* in north Gujarát, Káthiáwár and Cutch, and *Broach* in the central and southern parts of the province. Area almost everywhere above the last year, and in the chief cotton districts above the last six years' average, the early rainfall being generally favourable and seasonable. The deficiency of late rain was much felt throughout the province, except in Broach, where there was excellent rain in October. In parts there was some damage from frost.

Deccan.—Varieties, *Khandeshi* in Khándesh and Násik; *Nagar* in Ahmadnagar, and *Barsi* in Sholápur. Except in Sátára, area much below average, and except in Sholápur and Ahmednagar much below last year. Early rains were very late and unfavourable. In Khándesh the crop in many places suffered from long breaks, and though in places it was good, more so than usual, it was on the whole short. Average yield about ¾ crop in Khándesh; in other districts it was very poor.

Karna'tak.—Varieties, *Kumta* (indigenous) and *Dharwar* (acclimatized American). Area everywhere above last year, and above average, except in Bijápur. In these districts cotton is sown late in and after August. The season this year was late, particularly in Bijápur. In parts the crop was blighted by cloudy weather in January.

Sind.—In Haidarabad, the important cotton district, the area was slightly above last year, but considerably above average. There was slight damage from boll-worm.

B.—Wheat.

The area under wheat was :—

Province.	Average Area of previous 6 years.	1884-85. Area.	1885-86.	
			Area.	Outturn.
Gujarát.	Acres.	Acres.	Acres.	Tons.
British Districts ...	3,57,155	5,17,684	3,64,592	1,30,200
Native States ...	...	5,56,516	4,43,498	1,58,400
Deccan.				
British Districts ...	8,23,598	9,79,131	12,32,473	3,13,000
Native States ...	...	20,517	27,208	7,000
Karnátak.				
British Districts ...	3,41,808	5,96,660	4,79,562	98,000
Native States ...	...	1,09,879	1,01,641	20,800

Province.	Average Area of previous 6 years.	1884-85. Area.	1885-86. Area.	1885-86. Outturn.
Sind.	Acres.	Acres.	Acres.	Tons.
British Districts ...	2,72,858	3,05,645	2,84,658	...
Native States ...	...	35,694	35,907	...
Total.				
British Districts ..	17,95,419	23,99,120	23,61,285	5,41,200
Native States ...	...	7,22,606	6,08,254	1,86,200
Grand Total ...	...	31,21,726	29,69,539	...

Gujara't.—Except in the Panch Maháls, area slightly above average, though short in comparison with the abnormally large area of 1884-85. In the Panch Maháls the rain at sowing time was poor. Season on the whole favourable, though in parts there was slight damage from frost and cloudy weather. Chief varieties of wheat are: Dry-crop hard white (Hánsia and Dáudkháni) locally much esteemed, but too dear for export; and hard red (Kátha). The irrigated soft red (Vájia) is largely grown in north Gujarát, Káthiáwár and Cutch, and is in demand for export, though of low estimation locally.

Deccan.—Area everywhere above last year and above average. The early rains were not favourable nor seasonable for kharíf crops: hence a larger area was put under wheat. The showers in November and December were beneficial. But rust appeared in irrigated lands. In spite of rust, crop was nearly up to average. The chief varieties are: Bakshi (excellent hard yellow), Dáudkháni (medium hard white), Kátha (hard red), and Khapli, which is really spelt not wheat.

Karna'tak.—Area below last year, but above average, owing chiefly to unsuitability of early rains for kharíf crops. December rain very beneficial, though it induced rust, which was everywhere prevalent, but was not severe, except in Kolhápur. Crop a little below average. The chief variety is dry crop hard red, which in places is of excellent characteristics for export.

Sind.—Chief wheat district is Shikárpur, where the area was up to average, but below last year, owing to insufficient water-supply from some of the canals. Most of the Sind wheats are irrigated. The dry-crop area is confined to the flooded land. Crop everywhere good.

78. The figures for the area are fairly complete, though as regards Native States perhaps less accurate than elsewhere. An attempt was made to compute the outturn for all British districts, except Sind, by the use of the formulæ prepared under the orders of Government in 1883 for estimating outturn. For Native States the outturn was estimated according to the proportion found in the British districts. The formulæ, which were drawn up by a Committee of experts, are, no doubt, the best evidence yet available for calculating the outturn. But the way in which they are now used by village and táluka officers so far frustrates the object intended to be secured by them, that I was constrained to represent to Government the advisability of their withdrawal from the táluka offices. In the revised Manual (Táluka Form No. 36) provision has been made for the insertion, by the Mámlatdár, of the anna valuation of crops based on his observation and on the information furnished by village officers and cultivators. From the estimates of the crops in annas furnished by the Mámlatdárs, some approximation in weight may be possible. The whole question, including that as regards the standard to be adopted in estimating the outturn of crops in the preparation of forecasts, has been referred by Government to a Committee consisting of the three Divisional Commissioners. (Government Resolution No. 6685, dated 21st September 1886, Revenue Department.)

79. As regards trade in these two articles in the several districts of the Presidency, the information in the forecast reports is still imperfect. So far as the returns show, about 7½ lákhs of bales of cotton were received into Bombay from all parts of the Presidency during the six months ending 30th June 1886, or nearly half of the total imports into Bombay from all parts of India. Of the 7½ lákhs about 5 lákhs were from Gujarát, including all Native States, about 140,000 from the Deccan (from Khándesh and Násik), about ½ lákh from the Karnátak Districts, and about 20,000 from Sind. The total exports from Bombay to all external ports amounted to 9,34,000 bales.

It is interesting to note that of the total 48,000 bales received into Bombay from the Kánarese Districts, half were received by sea and half by rail. This seems to show that the sea route can still compete with the railway. Yet large export by the latter route, impossible by the former, goes on in the monsoon months. The monthly trade returns given in the margin show that the total exports of cotton by sea from these districts to Bombay rose from about 2,000 bales in April (when the new crop begins to be ready for the market) to 12,000 in May. After May the exports fell to 4,000 in June, 360 in July and 250 in August. The returns of trade by rail, on the other hand, show that the exports rose from 1,734 bales in April to 8,714 in May and to 13,253 in June. In July and August they were 7,500 and 6,943 bales respectively. These figures show the great benefit the Southern Marátha Railway has conferred on the cotton trade of this part of the country. Had the railway been not constructed, the 27,000 bales of cotton of the new crop, which is nearly half of the total exports, would have been stored in local godowns, to be there partially damaged, and would have been brought to Bombay after the rains.

Months.	By Rail.	By Sea.
1886.	Bales.	Bales.
January	36	2,592
February	34	1,456
March	234	1,191
April	1,734	2,311
May	8,714	12,317
June	13,253	4,207
July	7,503	360
August	6,943	249
Total ...	38,451	24,683

As regards wheat, the total quantity received in Bombay from all parts of the Presidency during the six months ending 30th June 1886 amounted, roughly speaking, to 72,000 tons, of which about 50,000 tons were from the Deccan (this includes the wheat from the Nizám's territory booked from the railway stations in the British districts), 13,000 were from Gujarát and about 8,000 from the Kánarese Districts. The Deccan wheats are evidently the hard white variety in demand in South Europe, the Gujarát wheats are the irrigated soft red wheats (Vájia), and the Karnátak wheats are the hard red wheats which are pronounced by the Chamber of Commerce as suitable for export. The Sind wheats (red and white soft) are not received in Bombay, but are sent to Europe direct from Karáchi. The fact that the 72,000 tons represent about a fifth of the total imports received in Bombay during the same period from all parts of India shows the extent to which this Presidency is contributing to the expansion of the Indian wheat trade.

80. Some alterations have been made regarding the submission of the forecasts for the next season. In March last, the Government of India decided* that for the coming season, in stead of six monthly forecasts, two should be submitted for cotton—one in the latter half of July containing a statement of the character of the crop, and the other in the latter half of October containing the fullest details available as to both the area and prospects. The wheat forecasts were similarly reduced from six to three,—the first on the 20th December containing a rough account of the state of the crop and the area figures wherever available; the second on the 1st of March containing accurate information regarding both the estimated area and the state of the crop; and the third on the 15th of May containing revised and fuller information on the points mentioned in the second report, with a general statement regarding the character and prospects of the other food crops. These orders are in accordance with the principles proposed by me in 1884†, when the question of the preparation of forecasts was first raised. The dates fixed for the submission of the cotton forecasts were evidently unsuited to the requirements of this Presidency, as in some of the most important cotton tracts cotton is sown as late as August and sometimes as the end of September. They were accordingly changed. The dates now fixed for the first report are 10th September for the early districts of the Deccan, and 10th October for the rest of the Presidency; and for the second report the 10th December and 10th February respectively. No modifications of the orders were required in the case of wheat.

*Bombay Government Resolution No. 2324, dated 25th March 1886, Revenue Department.

†Letter No. 376, dated 30th April 1884 (*vide* Government Resolution No. 7298 dated 12th September 1884.)

81. The subject of the preparation of forecasts for oil-seeds was again pressed by the Government of India, and reports similar to wheat were asked for winter oil-seeds. The subject is beset with many difficulties. There are no less than six different kinds of oil-seeds produced in this Presidency. Most of these are grown in some parts as *kharif* and in others as *rabi* crops, and again in the same tract varieties of the same crop are grown in both seasons. If the forecast of oil-seeds is attempted, separate details must be given for each variety. But this, again, is not possible, as in the returns of this Presidency some are erroneously confounded (*e.g.*, niger with sesamum), and cannot yet be separated. These facts and the inadvisability of extending, for the present, the scope of the forecasts to crops other than cotton and wheat induced the Government of India to decide that, pending further communication on the subject, no forecasts need be submitted from this Presidency for oil-seeds.

3. Tobacco.

82. The opinions received from experts on the samples of Nadiád cured tobacco are not more favourable than the former opinions recorded, nor has the plan of selling samples in bulk through brokers secured as favourable a result as was anticipated.

The Italian Consul reports the opinion of the Commission appointed to have been that the tobacco is not suitable for the monopoly, the leaves being dry and insufficiently developed, and the material wanting in burning properties as well as in aroma. A Liverpool firm thought that the tobacco would fetch 5*d.* per lb., but commented on the lack of burning power. The Gibraltar opinion was somewhat similar; but it is stated that the demand there is for a dark strong tobacco.

Other opinions are more or less favourable; but, on the whole, the experiment of last year cannot be said to have been successful. All the opinions are sent to Mr. Behechardás Veháridás, and further experiment rests with him. I have twice visited his curing sheds, and need only say that he is doing with his colleagues all he can to fit the tobacco for its most suitable market. He has sown seed of various foreign tobaccos, and has still kept Mr. Jöns in his employ. The Junágadh Darbár is also co-operating. Samples of Nadiád tobacco were sent to the Indian and Colonial Exhibition, but, as far as I know, have not attracted notice.

4. Arrowroot.

83. Both Mr. Woodrow on the College of Science Farm and Mr. Gogte in Ratnágiri have improved their area under arrowroot and the preparation of the starch, as well as the cost. Last year the latter offered arrowroot at 12 annas per lb. The Commissariat Department procures its supplies at 4½ annas on the average, and could not afford to encourage a more costly article. Later on, an offer for Commissariat supplies at 6 annas per lb. was made, which I considered worthy of support. The Commissary General submitted samples of arrowroot supplied by contractors at Bomboy, Poona, Mhow and Karáchi to the Chemical Analyser, who found the Mhow sample to be Maranta (as Mr. Gogte's is), and the others Manihot arrowroot, which is not inferior. It was shown that the loss which would be incurred by accepting Mr. Gogte's offer would amount to Rs. 868. Government declined to encourage the local industry at this cost. Mr. Gogte, undaunted, has gone on, and in August offered to supply the amount required by the Commissariat at 4½ annas per lb. delivered at each station, *i. e.*, at a rate as cheap as that ruling in the Commissariat contracts, where though some samples are clearly as good as that offered, it is not by any means shown that all are as good as the samples analysed. Mr. Gogte makes the condition that he should be guaranteed the supply for five years. This last offer is under the consideration of Government.

5. Indigo.

84. The resuscitation of indigo as a field crop in Gujarát appears likely. It seems therefore advisable to notice here shortly the history as far as it is on record. In the 16th and 17th centuries, indigo, partly of local growth and partly brought from Upper India, was one of the chief exports of

Gujarát. Towards the close of the 18th century (1777) the cultivation, chiefly for local use, would seem to have been on a very considerable scale in Gujarát. But in the early part of the present century it again fell off, and in 1827 had almost altogether ceased. At that time, prices were high and the demand was strong, and Captain Cruickshank, then engaged in surveying northern Gujarát, was of opinion that by the help of a little special encouragement the people of Kaira might, especially in Petlád, be induced to grow indigo. The attempt failed, and indigo has never again become a product of any importance. When grown in rotation with other crops, indigo has the merit of leaving the land richer than it found it. Indigo refuse is a valuable manure. The labour and capital required for its production and the comparatively small profit it yields (net profit of Rs. 18 per acre) are perhaps the chief reasons why indigo is now grown only to a limited extent. In 1884-85 the area under indigo in Gujarát was 1,468 acres, of which 557 were in Ahmadabad, 302 in Kaira and 609 in Broach. There were also 3,717 acres in Khándesh. In other districts of the Presidency, it is not grown. Another reason why it is not popular in Gujarát is that the preparation of the dye is accompanied by loss of insect life —a result most distasteful to the Kunbi and Koli cultivators of Kaira.

A small plantation for experiment has recently been made in Junágadh at the instance of Mr. Haridás Viháridás, the Diván. A factory for the manufacture of the dye has been opened. The opinion (10th April 1886) of the Calcutta firm of Messrs. J. Thomas & Co. on a sample of the product of the first year's trial was: 'In colour and paste it resembles some of the indigo made in the Aligarh Districts. We should describe the indigo as broken and small broken, close dark and dark-reddish, and is worth at the highest point of last indigo season about Rs. 150 to Rs. 160 per maund. No attempt apparently has been made to make the indigo into square or, say, oblong cakes, in which shape its value would be improved. The indigo would also be more appreciated if it were redder in colour and softer pasted. Its dark appearance is quite likely, we think, to be caused by oversteeping, and this would also tend to make the paste close and hard. There is one good point about the indigo, and that is it is clean and fairly free from sand.' These suggestions will receive the careful consideration they deserve at the hands of the Junágadh authorities, who promise in future to turn out the stuff of the purest quality in oblong or square cakes and of the paste and colour required. The area under indigo this year (1886) in Junágadh is about 600 acres, and, if no injury happens to the crop by the excessive rainfall of the season, the estimated outturn will come to 300 Indian maunds, which quantity will be available for the market.

6. Manilla Hemp.

85. The experiments referred to in para. 39 of my Report of 1883-84 have been in part prosecuted. Mr. Strachan at the Haidarabad Farm has given attention to the subject, and is not encouraged. The fruit is small, and it shows a tendency to fall or rot before it is mature. The fibre he considers a failure. It is weak, small in quantity, and very difficult to prepare. I have kept a record of the results so far secured. Mr. Stormont has had no better success. He prepared the fibre in the manner usual for getting fibre from the *ambádi* (Hibiscus cannabinus) after first passing the stems through the rollers of a cane mill. The percentage of fibre, 1¾ lbs per 100 lbs. of fresh stem, was higher than that reported from Saidápet, but a cord broke with a suspended weight of 147 lbs., while a cord of similar weight and thickness of *ambádi* sustained a weight of 330 lbs.

Mr. Woodrow reports that he has sown the seed of what he believes to be a cross between the Manilla hemp and the *sonkel* (or golden plantain, one of the finest species,) on the 12th August. It has not yet germinated; but if it does sprout, the result of the experiment will not be known for five years, the time taken to fruit, when the plant is raised from seed.

7. Manilla Tamarind (Inga dulcis).

86. The Collectors of Ahmadabad, Broach, Poona, Sátára, Khándesh, Ahmadnágar, Belgaum, Karáchi and Shikárpur of their own accord procured seed

from the Bhadgaon Farm. The results are in places fair, but hardly worth notice here.

8. The Date Palm.

87. (Last Report, para. 115). The suckers of the Arabian Date Palm intended for trial in Gujarát died before they could be sent off. New suckers will not be ready for two years or more.

Dr. Bonavia of Etawah has written a pamphlet on the date palm, and suggested an experiment near Ganesh Khind (Poona), so that irrigation might be available. The use of the plant would be to give a supply of dates in times of failure of ordinary crops. He recommended that seeds and off-shoots should be obtained from the Persian Gulf. Mr. Woodrow, however, reports that eight years ago he purchased dates of the finest quality, and planted the seeds. Many of the plants were distributed. About 100 kept in the gardens at Ganesh Khind are now 10 feet high. These, says Mr. Woodrow, will be valuable for toddy, but there are hundreds of trees in this district in every stage of growth. If seedling trees in this climate would produce good dates, we should have had already dates of local production in our market. It is well known that the best varieties of dates are propagated by off-shoots and not by seeds, and that off-shoots of trees of warranted status are very difficult to procure. When this difficulty is surmounted we shall have to wait many years till the trees mature, and then take a full crop during a famine year only, because it has been proved that a moist atmosphere during the ripening season prevents the proper development of the fruit. In this climate, soil capable of growing dates as described by Dr. Bonavia is also capable of growing sugarcane and mango trees of the finest varieties.

9. Pinus Australis.

88. In 1882, seeds of the Pinus Australis, a tree highly prized in America both for building purposes and for the turpentine and resin which it yields, were received from the Secretary of State and distributed in other Presidencies. But the results of the trial were not satisfactory, and this was attributed to want of vitality in the seed caused by the delay which unavoidably occurred between the original collection of seed in America and its resowing in India. A fresh trial was ordered, and in 1885 about 17 lbs. of seeds in a tin-lined deal case were sent to the Bombay Presidency for trial in Gujarát and in the southern parts of Sind, with instructions to sow the seeds immediately on arrival in suitable localities. In Gujarát the Conservator of Forests, N. C., distributed the seeds among the Divisional Forest Officers of north Thána, Surat, Panch Mahals, and the Commissioner of Customs. In the Balsár forest range of Surat and in the sandy parts of Panch Mahals only the seed germinated, and in Balsár the plants were 2 to 3 inches high. In other parts either the seed failed to germinate, or the seedlings died after sprouting. The results of the trial were not encouraging, and the Conservator of Forests recommended that no more money should be wasted in making a further trial. In Sind the seed was sown in three places, but it failed to germinate, except in a plantation where arrangements for regular watering could be made.

10. Barilla Plant.

89. This is one of the many plants recommended for diminishing salt in land rendered unfertile by its excess, and also for the reclamation of salt marsh. The seed was distributed largely, but appears to have done well only on the Nadiád Farm. There it was sown in March in a sandy loam, and irrigated till the rains came. The soil is decidedly saltish, and so the water of the well used for irrigation. Whatever seed is secured, will be kept by Mr. Behechardás for trial, sown perhaps as an early rain crop in salt land.

C.—Agricultural and Cattle Shows.

90. Financial pressure has operated as a complete bar to the furtherance of the scheme indicated in para. 131 of last year's Report to establish an annual Provincial show under the auspices and management of the Agricultural Department, to be held in turn in the localities where local shows have secured success.

The principal shows of the year were:—

Province.	Place.	Prize Money. Rs.	Date.
Deccan	Ahmadnagar...	2,000	17th November 1885.
Southern Marátha Country ...	Chinchli ...	2,991	23rd February 1886.
Káthiáwár ...	Wadhwán ...	2,312	1st March 1886.

The Poona Cattle and Agricultural Show, separated from the Horse Show on account of the unsuitability of the time of the year for the exhibition of cattle and agricultural produce, was not held on account of want of funds. I was only able to be present at the Wadhwán Show. The Nadiád Agricultural and Cattle Show is biennial and will be held in January next, and it is hoped that the Poona Agricultural and Cattle Show will also be possible this year.

Ahmadnagar Show.—Government contributed Rs. 600. The prize money was allotted thus: (1) Horses Rs. 1,000. (2) Cattle Rs. 500. (3) Agricultural Produce Rs. 500. The amount actually awarded was a little more than that of the previous year (Rs. 1,856). The best prizes were carried off by horses from the Poona District. It is intended to confine the show to exhibits from the Nagar District. The show was very successful.

Chinchli Show.—The show is organized by the Kolhápur State. The funds amounting to Rs. 5,225 were subscribed by the Chiefs of the Southern Marátha States. There was a large increase, notably in the number of oxen and horses. The exhibits were:—

	Exhibits.	Prizes.
Horses	109	44
Oxen	218	56
Buffaloes	24	7
Agricultural Produce ...	600	121

Rs. 2,991 were, in all, awarded in prizes. Besides the animals exhibited there was a large collection of cattle and horses brought for sale at the fair, to which the show has been superadded.

Horses, 377
Oxen, 9,723
Buffaloes, 2,400

Wadhwán Show.—The funds were subscribed by the Chiefs of Jhálávád Pránt. The allotment for prizes was:—

	Rs.
Horses and Mules	571
Cattle and Sheep	417
Agricultural Produce	738
Machinery	122
Miscellaneous, Dogs, Poultry, &c. ...	464
Total ...	Rs. 2,312

The success of a distribution of the seed of soft white wheat was shown by the exhibits of samples from three States—excellent in character. The steam wheat-thresher was exhibited and attracted attention. The show was under the management of Colonel Nutt, and is the eighth agricultural show which that officer has inaugurated in Káthiáwár. It was largely attended, and gave strong evidence of the interest in agricultural improvement in Káthiáwár.

The question of giving, in lieu of cash, prizes of livestock and implements was raised by the Government of India. (Government Resolution No. 775, dated 16th January 1886). It has been referred for opinion to the Show Committees. The principle involved is good; but I gave my opinion that, as a rule, prize-winners will be able to make a better disposition of the money than the Committees could for them.

D.—Manufacture of Sugar.

Sugar refining.

91. Sugar refining has apparently made little progress during the year under report. The refinery at Poona is still closed, though the owner has gained a partial concession, in that he has been allowed to open shops in certain stations for the sale, by the glass, of the rum manufactured.

Date palm sugar.

92. The date palm sugar experiment (last Report, para. 136) has been indefinitely postponed. (Government Resolution No. 9883, dated 8th December 1885). It will be taken up again if a favourable opportunity offers itself, or when the Agricultural Department can provide for due supervision in those tracts where success is likely.

Mowra sugar.

93. The Collector of the Panch Mahâls asked for information as to whether there is possibility of using the mowra (Bassia latifolia) for sugar instead of liquor. The tree abounds in his district and in the neighbourhood. Enquiry showed that this use of the mowra flower is unknown in India.

Sorghum sugar.

94. The efforts to imitate America in the manufacture of sorghum sugar have been described under the section devoted to Agricultural Experiment.

Cane sugar.

95. The Consul for the German Empire having desired information regarding the cultivation of sugarcane and the manufacture of sugar, advantage was taken to collect detailed information from all parts of the Presidency. It is intended, as soon as the compilation is made, to issue a separate paper on the subject, which cannot fail to be of general interest.

96. *Experiment.*—At the instance of the Forest Commission I conducted an experiment in Bassein (North Thána) to show whether there are any peculiar circumstances necessitating the use of wood as fuel for boiling the juice. At Balsár, in Surat, close by, the refuse cane supplemented by thorns and wood is used. At Poona all the *gul* is made with the refuse cane and leaves, useless as fodder. In Khándesh, thorns are plentiful. The crushed cane is a perquisite of the potters, who, after extracting the saccharine matter still left from the rude crushing, use it as fuel for their pottery manufacture. I found that at Bassein, in like manner, the refuse cane is fully utilized, but here as a ráb material for rearing rice seedlings. This justifies the use of wood fuel for *gul* making. I, however, found reason to believe that by the substitution of a shallow for a deep pan much economy is possible. The use of a deep narrow pan is confined to Bassein. I made trial boilings, using in one case the Bassein pan and wood fuel, in the other the Poona pan and only refuse cane. Of the former fuel, 280 lbs. dry and of the latter 220 lbs., also dry, equivalent to 440 lbs. freshly crushed cane, were consumed. The capacity of the Poona pan is ⅓rd more than that of the other. The comparison may be more clearly stated thus—that for an equal weight of juice the latter requires as large a weight of dry wood as the former does of freshly squeezed cane. The other figures of the experiment are shown marginally. It will be seen that the refuse cane is scarcely sufficient, by this calculation, to boil the juice of the area from which it is taken, but the deficiency can be made up by the dry leaves of the cane as in Poona, or by the addition of thorns or a little wood as in Balsár.

	Per acre.
1. Number of canes	30,000
2. Weight of canes ready for mill.	31⅓ tons.
3. Juice 65 per cent. on weight of cane	20½ „
4. *Gul* 16¼ per cent. on weight of juice...	3¼ „
5. *Gul* on weight of cane ...	10½ p. c.
6 Wood fuel, dry, to boil the juice (Bassein pan)	12½ tons.
7. Do. of megass, dry, (Poona pan)	6¼ „
8. Do. from an acre of cane ...	5½ „

The quality of the shallow-pan *gul* was inferior to that of the deep pan. Some allowance may be claimed for want of skill, for the men I employed were not first-rate boilers, and the Bassein expert specially declared that the deficiency was due to want of skill. This expert valued the local *gul* at 17⅗ lbs. per rupee,

and that made with the Poona pan at 18½ lbs. To test the keeping qualities I kept samples till the heavy rains had passed. This test was again in favour of the Bassein *gul*. When finally sold it fetched a high price, 17 lbs. per rupee, in Poona, where the best *gul* was selling for 20 lbs. But this rate was commanded by the other, which shows that it was good *gul*. The net inference is that, by the substitution of the shallow for the deep pan, economy in fuel is possible—an economy which the dearness of fuel, except at Bassein, has already brought about in other parts of the Presidency. The Bassein pan is of copper and that of Balsár and Poona of iron. The copper pan lasts longer and sells better when worn out than the iron one. But there is no reason why the copper pan should not be made shallow. It would then resemble that used in Kánara. I have hope that the lesson in economy here indicated will soon be taught to the Bassein sugar-boilers. Mr. Navroji, the apprentice on the Bhadgaon Farm (see Farm Report for 1885-86, para. 98) has with my full consent resolved to introduce an improved mill which he has seen so successfully worked at the farm, as will be shown further on (see para. 105). He will have to provide pans to keep the boiling up to time, and he intends to use the shallow pattern. There is little doubt, I think, that he will succeed, and in doing so the necessary lesson will be inculcated.

E.—Ensilage.

97. I have personally made no further experiment in ensilage. The small appreciation shown by the Military Department noticed last year and the financial pressure have deterred me from asking for funds.

At the Bhadgaon and College of Science Farms, ensilage has made good progress; and experiments have been made at Belgaum and in Kánara.

98. Mr. Stormont had 5 silos and has fed 700 cwts. of silage to the farm cattle, leaving one silo still untouched. The proportion between the outturn and the green stuff pitted shows a wastage of 47 per cent.—a proof that as yet, as he himself readily admits, there is something wanting. He does not find the cost of production so low as the usual estimates would make it, and thinks that silage is as yet only shown to pay when good cattle are to be kept.

99. I noticed last year the experiments made by Mr. Woodrow at the College of Science Farm, (last Report, para. 156). The black soil silo was opened in March 1886, or 21 months after the filling. The stuff (grass) had kept excellently, and was used as fodder for the farm cattle up till the 30th May. This is a proof of the power of keeping ensilage throughout two rainy seasons. This year Mr. Woodrow has filled another silo (contents 3,840 cubic feet) with jowári cut flowering at the end of August. The jowári was an early variety. By cutting it thus early there will be plenty of time to prepare the land thoroughly for a rabi crop.

100. A fairly successful experiment was made by the Agricultural Instructor of the High School Class at the Belgaum High School. There was considerable loss on the sides and top. The silage was mostly eaten by the cattle of the demonstration farm.

101. Three silos were opened in Kánara in the last two years—one at Belikeri in March 1885. Here the stuff had not kept well on the sides and at top and bottom, but the central portions were quite sound, moist, green and with a good smell. When taken out, the silage was dried and weighed. It was found to weigh 2 tons. 10 tons of green grass had been silaged. I think it a mistake to dry the silage. At Sadáshivgad and at Kárwár the results were not more satisfactory than at Belikeri.

102. These results point to the presumption that success with katcha silos is not easy to secure. I personally am not yet convinced of their merit, except when under experienced management.

103. Colonel Caldecott, Superintendent Gunpowder Factory, who assisted me in my first experiment in 1883, has continued to make and use silage. He has made sweet silage successfully. The silo was filled in November 1885. A layer of grass, 3 feet deep, was first put in and left uncovered till the tem-

perature rose to 126° F. This point was reached in 48 hours. Other similar layers were then added till the silo was filled. Each layer after the first heated to the required temperature in 24 hours. Weights of 150-180 lbs. per square foot were finally placed. The temperature of the mass gradually decreased to 96° F. in 6 weeks and then remained stationary. The silo was opened in February 1886. The silage was good and sweet. Cattle ate it greedily. Some horses would not, and there was no opportunity of teaching them to like the new food. Colonel Caldecott's own horses throve on the silage throughout the hot weather, and kept in excellent condition.

Another experiment was tried with the object of lessening wastage. Instead of uncovering a small portion and cutting down perpendicularly to the bottom, the plan of uncovering all was tried, the ensilage being taken day by day in layers from the whole surface. The result was not satisfactory. The wastage was greater than before. Colonel Caldecott's experiments are valuable.

F.—Improved Agricultural Implements.

Threshers.

104. The steam wheat thresher has been discussed under the wheat section. The Gujarát machine, referred to in para. 160 of last Report, has been made over to Mr. Woodrow for trial. He has formed a high opinion of its merits, but wishes to reserve his final opinion till he has had a further trial this season.

Sugar mills.

105. The Poona 3-roller sugarcane mill has been patented, and a competitor has arisen, who has set up a large factory in opposition to Mr. Subráo, which goes to prove the local estimate of the invention, though it has caused a law suit. Attention has been drawn by the trials made. Four mills were sent to Ahmadabad, where it is reported they fetch Rs. 2 hire a day. The Bihia mill was sent to several parts of the Presidency by the Bombay agents. From Bársi a favourable report has been received. At the Bhadgaon Farm, where Mr. Stormont exhibited the mill and tried to find purchasers, it has been cast into the shade by the great appreciation won by the McOnie mills on the farm. These are horizontal mills with 3 rollers; one large one with rollers 16″ in diameter cost Rs. 1,000; the others with 12″ and 8″ rollers costing Rs. 700 and 500 respectively, of which the latter was made on McOnie's muster in England by W. Nicol & Co., Bombay. The latter only differs from the McOnie mill in an improved adjustment of the driving wheel. Trials showed these mills superior to the Bihia and Poona mills (Khándesh Farm Report, 1884-85, paras. 66 to 68). The McOnie mills were brought out for the Broach Exhibition as far back as 1868. They were purchased there by the Máheji Exhibition Committee. The Nicol mill was afterwards purchased for the farm. It was a long time before the mills were set up properly, and a still longer time before local prejudices were overcome. The two smaller ones have been hired out, and have in the last year alone fetched a net income of Rs. 335—an ample proof both of the need of improved mills and of the success of the improvement tried. It was my intention of asking for sanction to purchase some more of these mills, but private enterprize came in. Mr. Navroji Manekji has undertaken (see para. 95 above) the work of extension. He has had mills made up on McOnie's muster in Bombay at a cost of Rs. 400 each, and will this season work them on his own account in various districts. I think the success of these mills shows that the people, though slow, are amenable to improvement, and that the instrumentality of Government farms is indispensable. The steam engine, which is part of the wheat-threshing machinery lately purchased for the farm, will be used this season to work the large McOnie mill at the farm.

Ploughs.

106. As stated last year, several of Massey's ploughs have been tried in this Presidency, but no success worthy of note has been attained. The only reason is, that there are not yet men trained to work an iron plough. The plough which Mr. Stormont made up at the works of Messrs. Ransomes, Sims and Jefferies at Ipswich, which has been named the "Rokra" plough after the farm, is found very useful. I bought 12 during the year with spare parts. The cost, landed in Bombay, was Rs. 30 a piece—a cost capable of great reduction if locally made. The Bhávnagar and Gondal State School Farms have each taken one for experiment, and so the District Local

Fund Board, Sholápur. Four were sent for trial to the Haidarabad Farm, and the rest are used by the Bhadgaon Farm, where an outside demand also has arisen. Mr. Strachan finds the stilts too short, and remarks that the implement-makers at home do not give the Sindi credit for his height. He, however, does not altogether approve of the plough, which he considers too heavy for the Sind cattle Mr. Woodrow has worked a large plough, received from the Secretary of State, of which the price is not known. It has a rotary mould board, and has worked excellently with 3 pairs of good beasts. This implement is useful with skilled supervision. It breaks up heavy land beautifully, and makes a clean furrow, the rotary mould board having the effect of cleaning the sticky black soil and preventing clogging.

Bone Mill.

107. This mill was similarly procured for the College of Science Farm. The working has been very successful. It crushes bones (but not horns) to what are called "one-inch bones" at the rate of 1 ton a day worked by 4 bullocks. The remarks made by Mr. Woodrow are worthy of reproduction here :—

(1). The chief event of the year is the arrival of a number of agricultural machines kindly supplied by the Secretary of State for India, including a Bone Mill, thresher, chaff-cutter and winnower, with a bullock power for driving the machines.

(2). In our circumstances the most important machine is the Bone Mill. The one supplied crushes fresh or dried bones into pieces not more than 1 inch diameter when worked by four bullocks at the rate of 1 ton daily. I expect to be able to bring those pieces into a soluble form by fermenting the crushed bones by means of decaying stable litter.

(3). The 1-inch pieces of bones are larger than have yet been reduced by fermentation within a reasonable time; but as the bones are, for the most part, fresh, and contain much organic matter and water, I hope to be able to report success. Three tons are at present in the fermenting pits, and I expect to greatly increase the quantity immediately.

(4). Bones can be purchased here at present at Rs. 14 per ton, and if the crushing and fermenting can be done for my estimate Rs. 6 per ton, the manure will be very cheap.

(5). The subject of bone-crushing is of extreme importance for the agricultural advancement of this country, because, as is well known, bones contain, weight for weight, 17 times as much valuable manure as good cowdung, while the selling price of bones uncrushed in this district is not more than three times the price of cowdung.

(6). It is also well known that there is no special deposit of phosphatic mineral available for manure in the Bombay Presidency. Yet Bombay exported to British ports, in 1884, bones for manure to the value of £99,248. If this continues many years, the result will be a serious diminution of the small proportion of phosphates existing in our soils, and consequent exhaustion and sterility.

(7). The obvious remedy is—crush the bones and return them as manure to the soil they came from, and I believe it will ultimately be highly profitable for Government to supply the farm with a powerful bone-crushing mill capable of grinding bones to "meal", and the necessary power to drive it.

Last year I described another process for utilizing bones as manure (last Report, paras. 139-141). I regret that Mr. Cooke has not been able to push his new manure into notice.

108. It will be seen, from the extracts taken from Mr. Woodrow's report on the College of Science Farm, that several other implements are under trial. The results will be watched. The short American scythe, which Mr. Woodrow found so useful last year in cutting bájri and again this year jowári for ensilage, was sent to the Haidarabad Farm for trial. It was fairly successful with wheat there; but, as the wheat is irrigated and grown in beds, its merits are not yet admitted.

109. I have made a useful collection of all the principal implements of husbandry in use in this Presidency. The larger ones are represented by models. The collection was made for the Indo-Colonial Exhibition, but I have kept duplicates for my own use.

A special report has been made, during the year, regarding the varieties of small hand implements, such as axes, bill-hooks, reaping hooks, and the like, with the object of ascertaining whether the use of better material without alteration of shape cannot be effected. Samples were sent to Messrs. Bushby & Co., who will, no doubt, study the feasibility of improvement.

G.—Value of Jámbhul (Eugenia Jambolana) in ridding tanks and wells of moss.

110. I noticed this subject last year (para. 163). Experiments have been made in the Kánara and Dhárwár Districts. Earthenware vessels were filled with the water of wells and tanks infested with the moss. Into one set, chips of the bark of the jámbhul were introduced, with the result that the moss blackened and died in three days. In the other the moss kept its vitality and colour. Further experiments in Kánara corroborate former results, but it was found that the moss re-appears after a time (about three months).

VI.—CATTLE-BREEDING AND VETERINARY ESTABLISHMENT.

A.—Improvement in the Meat Supply.

111. Last year I quoted at length the recommendations of the Commissary General on the subject of improving the mutton and beef supply in quality as well as in quantity. I have placed myself in communication with that officer, and have by his courtesy obtained promises of facilities for conducting experiments at the Commissariat Farm of Alegaon near Poona. As no final scheme has yet been submitted to Government I merely note the fact here, that the subject has not been neglected, but is in a fair way of receiving special attention. Special attention is not only called for by the representations of the Commissariat Department, that the danger of a meat famine is not to be overlooked, but also by the increased efforts of the Forest Department to improve conservancy. The rigorous exclusion of sheep and goats from lands set apart for forest is insisted upon. Such exclusion, however necessary in the interests of forest conservancy, must naturally act in the direction of still further diminution of the meat supply. Sheep are most valuable auxiliaries to arable farming, but cannot be kept to arable lands as in England; for here we have no substitute for roots which form the food there of sheep penned on arable land. Sheep are pasture fed. The exclusion from forest lands may be, I think, carried too far. Sheep and goats must be excluded from conserved areas planted with young seedlings to secure any result at all in reboisement. Goats are more harmful than sheep, but the latter cannot be kept without a certain, though small, admixture of goats to lead the way. But neither sheep nor goats can reasonably be excluded from pasture lands or from well-established forests. Sheep form the safest stock for a rayat to keep showing a power of eking out a subsistence when other stock die of starvation. Mr. James Strip of Ahmadabad (Government Resolution No. 9431, dated 23rd November 1885) has given an account of some interesting experiments carried out by him. These practically were keeping sheep on arable land, feeding them chiefly on bábhul pods, in the same way as sheep are fed on roots in England. He reports that he succeeded in bringing sheep up to 70 lbs. dead weight, and found the business a profitable one. He does not anticipate a mutton famine, pointing out that the extensive jungle and grazing lands of Márwár can breed sheep for the whole Presidency. He advocates the cross between the Gujarát and the Deccan sheep. I have no doubt that the extension of bábhul cultivation in set areas, which I have strongly advocated, will go a large way to increasing the food supply requisite to keep up the flocks of the country and to increase their numbers.

B.—Pony Mares for Field Work.

112. The General Superintendent of Horse-breeding has during the year advocated the substitution of pony mares for bullocks in agricultural work. His object is to foster the breeding of mules, and he urges that the success obtained at the Babugarh Depôt proves the feasibility of his recommendation. The subject was fully discussed. It would be, in my opinion, useless to use ponies to plough anything except light land, of which the Bombay Presidency has comparatively little. They might be used for horse-hoeing and light-carting. But there is no chance, I think, of inducing the rayat to make even a trial, till the possibility of profit from mule-breeding and of the substitution, in part, of ponies for bullocks are practically demonstrated. I have offered to make a trial on the Bhadgaon Farm if mares are supplied. The question of experiment was put before the Chiefs of Káthiáwár. It was not encouraged.

C.—Civil Veterinary Department.

113. The Bombay Veterinary College and Hospital was opened, in July last, under hopeful circumstances. The management of the college has been entrusted to a Committee of 12, to which I have been nominated a member. The Poona Veterinary Hospital is being built. But a question of greater importance to the Agricultural Department has arisen during the year, and that is the organization of a Civil Veterinary establishment to be attached to the Agricultural Department. I found ample reason to support the proposal, and I believe that, but for the financial pressure, some such scheme as the following would have been by this time accomplished. I quote the remarks made by me, for they express the opinion I hold on the subject and the action which I consider desirable:—

The supervising staff of the Agricultural Department will be largely recruited from the College of Science (Agricultural Branch). For this and other reasons the proposal to organize the Civil Veterinary establishment as a branch of the Agricultural Department is justified. But the principle already thoroughly established as regards the general action of this Department must necessarily be made applicable to the Veterinary Branch, *viz.*, that enquiry must precede all attempts at improvement. In the first place, time must be given to educate competent subordinates. Again, enquiry is essential to ascertain the nature of the staff required and the duties which it can undertake. But the earlier enquiry begins the better. It is proposed, therefore, that the services of a competent Veterinary Surgeon, with experience as to the treatment of cattle-disease if possible and some knowledge as to breeds of cattle, should be placed at the disposal of the Agricultural Department.

First, he should systematically tour through the rural districts, taking every opportunity of being present at horse and cattle shows to collect information as to the different breeds of cattle, their respective merits, points, and defects. Much useful information on this head has already been collected through Revenue officials, which will be a general guide. He should carefully study the various cattle-diseases, ascertaining native names, symptoms, and characteristics, and should intimately acquaint himself with the local treatment of disease, both preventive and remedial, and the arrangements made by the agriculturists themselves to mitigate or check the extension of epidemics.

Secondly,—Concurrently with such enquiry he should systematically compile the information collected in a form which would be useful for veterinary students both at Bombay and Poona. After a time the notes will be capable of incorporation in handbooks in the vernaculars, which should also contain suggestions which professional knowledge may make safe and workable for circulation among Native officials and local bodies and even among the more intelligent of the agriculturists themselves.

The staff of the Agricultural Department would naturally be utilized by the Veterinary Surgeon in his tours, and he would commence his enquiry in districts where that staff has been organized. He would certainly be unacquainted with the vernaculars, and would absolutely need the assistance of the members of this staff as interpreters, especially as it would be generally, if not always, possible to place at his disposal men who already know a little about the subject of enquiry.

Thirdly,—He would especially proceed to districts visited by epidemics of cattle-disease, both as a means towards collecting at the most favourable time information as regards the customary action of the people themselves, and also to take such measures for the suppression or localization of the epidemic as may be feasible.

All this work is an essential preliminary to the formation of a regular Civil Veterinary Department. It is work which cannot be done except by a professional man, and work which will show how far the recommendations of the Commission of 1869 can be dealt with at once and how far they must be postponed. For instance, without such enquiry it is impossible to say whether the country is ripe for such legislation as the Commission recommends.

It may here be anticipated that perhaps the full time of such an officer would not be utilized with advantage. If this is found to be the case, which is very doubtful, the Veterinary Surgeon could very profitably be called upon to give a special course of lectures, either in Bombay or Poona, to the veterinary students, in amplification and explanation of the facts compiled with regard to native methods of dealing with disease and the like. Such lectures would in no way clash with the lectures of the regular course, and would be of great value both to the students themselves and to their teachers of theoretical and practical knowledge.

It will be time when the Veterinary Surgeon has traversed the provinces to prepare a scheme for the location of native veterinary agency in suitable places. Again, by the time the scheme is matured, the services of suitably trained subordinates will be available. These may either be added to the strength of the supervising agency of the Agricultural Department or incorporated (if their training has been secured at the Agricultural College) with that agency to be specially available for dealing with epidemics, but generally to carry on the regular duties of the staff.

D.—Cattle-Disease.

114. Another question of importance was decided during the year, and that is that legislation to prevent cattle-disease is inexpedient or, at any rate, premature in India. The District Officers were nearly unanimous in opposing legislation as calculated to be vexatious and ineffective. Government concurred that there is insufficient knowledge on the subject and as yet no adequate agency for the treatment of disease to justify legislation.

The subject of cattle-disease calls for a few remarks. Rinderpest broke out in the Ankola Táluka of Kánara in June 1886. After a slight cessation it appeared again in other parts of Kánara and in the districts of Bijápur, Dhárwár and Thána. There is little doubt that the disease is rinderpest and identical with the Steppe plague or murrain of Europe and Russia, and that it is highly infectious and destructive (Report on Indian Cattle Plagues in 1871, pages xvii-xxvii). The opinion of the authors of this report was based on enquiry, which elicited, among other facts, proof that rinderpest was the disease which caused a death-rate of 68 per cent. on attacks in Kánara in 1869. Mr. Steel, the Superintendent of the Bombay Veterinary College, deputed an assistant to Kánara and Dhárwár. Full details are not yet available; but it seems clear that the attacks in the various tracts noticed were not communicated from one place to another by contagion. Similar causes rather operated in various places. Mr. Price in Dhárwár has collected some valuable information which I shall report when all details are available. He found that isolation was not resorted to, but diseased cattle were allowed to drink from the tanks used by other cattle and the people themselves.

E.—Denaturalization of Salt.

115. No discovery has yet been made of a method of denaturalizing salt so as to cheapen it as a cattle condiment; and the reward of Rs. 5,000 offered by the Government of India is yet unwon. It has been said that the idea of denaturalizing salt to make it fit for cattle, but not for man, has been suggested by the success obtained in the case of methylated spirits. Here it was desirous to make alcohol available for the arts without loss of excise revenue. This was done by making the alcohol unfit as a liquor by the simple admixture of a small percentage of methyl alcohol. The analogy between this discovery and that hoped for in the case of salt is close, but the similarity gives very little hope of success with salt.

VII.—AGRICULTURAL AND FISCAL STATISTICS.

116. Returns of agricultural statistics were compiled for 1884-85 according to the orders of the Government of India on the proposals of the Agricultural Conference of 1883, and were submitted for transmission to the Secretary of State at the end of December. The agricultural returns were approved by the Government of India; but the fiscal returns, which are received from the Divisional Commissioners and submitted by me with the agricultural returns, were incomplete. These last necessitated the appointment of a Committee, consisting of the Divisional Commissioners, to discuss the several points raised. The subject is being considered by the Committee.

A.—Agricultural.

117. This is the first time it has been possible to show the Agricultural Statistics of the Presidency in the Annual Report of the Agricultural Department, which is due for submission to Government on the 1st November, the date also fixed by the Supreme Government for the submission of the Statistical Returns. Last year the returns were compiled in my office, but were not received from the Collectors in time for inclusion in the report.

Owing to a resolution of Government in April last, this report, with the Statistics of agriculture and rainfall, will be made public after perusal by the Secretary to Government. The Statistics will, therefore with the experimental results on the Farms, be published considerably earlier than usual.

118. The bulk of the published report has been greatly reduced by the omission of the tálukávár details. These are, however, carefully kept in my own office for my own reference and for disposal of references from any one desirous of such detail. On the other hand, more detail is given with the object of classifying Statistics according to varying grades of accuracy. Thus

the returns from surveyed Government rayatwári villages, which are the most accurate, inasmuch as such villages not only keep the forms prescribed by the Village Manual, but the forms are filled by accountants directly under the táluka authorities, are shown separately from those of other Government villages, which include villages held on tenures other than rayatwári, where the responsibility of the forms does not altogether rest with the accountants, but rather with the holders, who are not so directly under authority. The accuracy of these latter returns is thus considerably less than that of the former. But, again, they are more accurate than those from surveyed alienated villages; for though these, as far as shown in the returns, keep the prescribed forms, they are to a still less degree under command than the holders of Government villages. All other villages. *e.g.* unsurveyed Government and alienated villages or surveyed alienated villages, which do not keep the prescribed forms, are excluded on the ground that the statistics they can present are too incomplete and too uncertain for publication. The division of more trustworthy Statistics from those less trustworthy or not at all worthy of reliance is thus complete, and a great gain in the direction of improvement is secured.

119. It will be noticed, and perhaps with regret by some, that no comparison between the figures of the year under report is attempted with those of the previous year. Such a comparison would be irrelevant and misleading, as will be readily admitted; for as the classification above referred to was not made, the area with which the figures of previous years deal is uncertain and variable.

120. The returns now submitted bear evidence of greater care in compilation, and a closer attention to the requirements of the prescribed forms and explanatory memoranda than heretofore. They were for the most part also submitted more punctually. I would earnestly ask for attention to punctuality, for due time has not been given me for referring back questions of doubt or uncertainty. This point will be more essential next year when comparison will be attempted. With the new village forms of the Revised Manual, in which earlier though even more convenient dates than heretofore have been laid down for submission of village and táluka returns, punctuality will be easily ensured, and should be insisted upon.

I propose very briefly to review each return.

Return No. 1.—Area of Available Statistics.

121. The inclusion and exclusion of villages have been more carefully made. Sátára last year included a large area of alienated unsurveyed land for which the statistics were undoubtedly the purest guess-work. This year these have been freely excluded. So Ahmadnagar and Haidarabad, where there were no exclusions, show more appreciation of the standing orders. On the other hand, the exclusions in Ahmadabad, which amounted last year to about half the district, are now entirely eliminated. As all villages have been surveyed, the action taken appears to be correct, for the grading of the villages separates the superior from inferior Statistics.

Of the total Government villages included in the Presidency proper, 17,476 are surveyed rayatwári and 1,440 other Government villages. The latter are found in large numbers in Ahmadabad 384 Túlukdári and Mehvási; Khándesh 317 probably held on lease; Kolába 500 settled Khoti villages; Kaira 90 held on the Narva tenure; Panch Maháls 78 probably Túlukdári; and Ahmadnagar 61½, which are apparently chiefly Sarákati, *i.e.* held partly by Government and partly by alienees. Besides these, 6 Surat villages are Sarákati and 3 in Thána held by Khots.

122. The excluded Government villages are found chiefly in Kaira 37 held on the Túlukdári and Udhad Jamábandi tenures; Panch Maháls 108½ Túlukdári and on lease and 53 unsurveyed belonging to the Nárukot State which have now been treated as Government villages; Khándesh 231½, probably all leased villages, and Kánara 191 unsurveyed rayatwári. As regards Ratnágiri, where most of the villages are Khoti, it has been found necessary to exclude the whole district, because the reports do not separate the various classes with accuracy. A small portion only is rayatwári.

The gross area is slightly incorrect. No area, even approximate, is given for

(1) 53 (Nárukot) villages of Panch Maháls.
(2) 70 villages in Khándesh (39 in Taloda and 31 in Shirpur).

A similar omission was apparent in the returns of Kánara for 191 villages; but it has been found possible to enter in Form I. an approximate estimate of area not possible for the Panch Maháls and Khándesh, because these are intermingled with native territory.

As regards Sind, all villages returned as Government villages have been entered in my office as rayatwári; whether correctly or not it cannot be ascertained, for the returns were prepared in the old forms where classification is absent. A very large area of Government villages is excluded in Sind, chiefly because the unsurveyed area is very large. The Thar and Párkar District is wholly unsurveyed, and more than half Karáchi and Upper Sind Frontier.

As regards exclusions of non-Government villages, nothing need be said. As a rule, surveyed alienated villages have been included and others excluded.

Return No. 2.—Cultivated and Uncultivated Area.

123. The cultivated area is the occupied area *plus* such area of unoccupied land as has been during the year cultivated by authority, or is held on a lease for a number of years. Most of the unoccupied area, which is cultivated, is unassessed, and shown in column 7.

The cultivated area includes also the area of current fallow. The expression is only approximately accurate, for it includes occupied land, which is never cultivated, and not only fallow in its proper sense. It, however, excludes unassessed portions of occupied land (Pot Kharáb) which are classed as uncultivated.

124. I here give a statement which summarizes the figures of Returns Nos. 1 and 2 in a convenient form :—

DISTRICT.	Percentage on Gross Area of Area for which Statistics are not available.	Percentage on Net Area for which Statistics are available, of Areas.				
		Cultivated.		Uncultivated.		
		Actually cropped.	Current Fallows.	Available for Cultivation.	Not available for Cultivation.	Forest.
A.—Presidency Proper.						
I.—Gujarát.						
1. Ahmadabad...	...	54	23	4	19	...
2. Kaira	9	75	4	9	12	...
3. Panch Maháls	26	32	12	41	9	6
4. Broach	2	60	9	4	27	...
5. Surat	3	47	24	7	18	4
Average ...	6	56	17	9	17	1
II.—Deccan.						
6. Khándesh	7	55	5	18	12	10
7. Násik	4	54	11	9	10	16
8. Ahmadnagar	2	63	10	5	10	12
9. Poona	1	61	11	2	15	11
10. Sholápur	3	72	11	5	9	3
11. Sátára	4	60	14	2	10	14
Average ...	4	60	10	8	11	11
III.—Bombay Karnátak.						
12. Belgaum	1	60	12	6	7	15
13. Bijápur	1	72	9	9	6	4
14. Dhárwár	3	71	9	3	7	10
Average ...	1	68	10	6	6	10
IV.—Konkan.						
15. Thána	2	21	20	8	24	27
16. Kolába	*2	33	21	8	28	10
17. Ratnágiri	100	...	...	...	...	...
18. Kánara	14	10	4	2	18	66
Average ...	34	20	14	6	23	37
Average for the Presidency Proper ...	9	55	11	8	13	13
B.—Sind.						
19. Karáchi	59	13	14	16	53	4
20. Haidarabad...	37	14	25	44	17	...
21. Shikárpur	29	20	17	34	20	9
22. Upper Sind Frontier	57	20	33	33	9	5
23. Thar and Párkar	100	...	...	...	...	...
Average ...	62	16	21	35	24	4
Average for the Presidency ...	27	49	13	12	15	11

The table speaks for itself. The backwardness of such districts as Panch Mahâls, where 40 per cent of the area is still available for cultivation, and Khándesh, is well shown by the table, as well as the very small area still to be taken up in other districts except Sind. Current fallows must be explained as far as possible, though in the explanation offered I am drawing partly on surmise. In Ahmadabad it would seem that the area of current fallows is only very large in other Government, that is, Tálukdári villages. The surmise is that as the Tálukdárs pay for all land whether occupied or not, that area which would properly come under column 10 of Form No. 2, available for cultivation, is entered under current fallow. This remark applies also to the Panch Mahál Tálukdári area and the Narva area of Kaira. In these cases the revenue definition of occupied area makes the difference between the cultivated and the occupied area much larger than would appear from the definition above given. In Surat, as explained in the special report on Agricultural Statistics last year, the large percentage of current fallow is due to the extensive area kept under grass. In Thána and Kolába it is due to the conditions of local dry-crop cultivation on uplands which require long fallows properly so called, and where the column includes occupied land set apart for the growth of material for ráb. Such fallows are also large in all the Deccan Districts except Khándesh and in Belgaum of the Karnátak in hilly tracts. Sholápur appears to call for another explanation. A reference to the rainfall table will show that the large area of fallow was due to the non-sowing of the kharíf lands owing to bad early rainfall.

Return No. 3.—Crops.

125. To facilitate a study of the detailed figures which are given in the Returns, I here enter a table of percentages, which shows at a glance the area under food and export staples :—

Percentage of Food Crops and Non-Food Crops on Gross Area Cropped.

No.	District.	Food Crops.									Non-food Crops.			Total.	
		Cereals.													
		Jowári.	Bájri.	Paddy.	Wheat.	Coarse Grains.	Others.	Total.	Pulses.	Others.	Cotton.	Oil-seeds.	Others.	Food Crops.	Non-food Crops.
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
	A.—Presidency Proper.														
	I.—Gujarát.														
1	Ahmadabad	21	15	6	18	3	1	64	8	1	24	3	...	73	27
2	Kaira	11	28	16	3	23	2	83	9	1	1	2	4	93	7
3	Panch Mahâls	1	15	17	1	10	28 [Maize]	72	17	...	...	10	1	89	11
4	Broach	19	2	5	16	1	...	43	10	1	44	2	...	54	46
5	Surat	21	1	20	6	10	...	58	15	2	17	7	1	75	25
	Average ...	17	14	11	11	8	4	65	10	1	19	4	1	76	24
	II.—Deccan.														
6	Khándesh	19	22	1	12	1	...	55	7	...	23	13	2	62	38
7	Násik	5	37	2	17	11	1	73	11	1	...	15	...	85	15
8	Ahmadnagar	38	33	...	11	1	1	84	8	...	1	6	1	92	8
9	Poona	39	31	3	5	5	...	83	6	2	..	8	1	91	9
10	Sholápur...	67	8	1	3	...	1	80	6	1	...	11	2	87	13
11	Sátára	28	31	2	4	7	2	74	16	1	1	4	4	91	9
	Average ...	33	27	1	9	3	1	74	9	1	5	10	1	84	16
	III.—Bombay Karnátak.														
12	Belgaum	44	8	6	5	4	6	73	11	1	8	5	2	85	15
13	Bijápur	60	10	...	6	...	1	77	7	1	6	8	1	85	15
14	Dhárwár...	33	.	7	11	6	1	58	11	1	23	4	3	70	30
	Average ...	47	6	4	7	3	3	70	9	1	12	6	2	80	20
	IV.—Konkan.														
15	Thána	...	..	62	.	22	...	84	9	1	...	4	2	94	6
16	Kolába	..	...	53	..	35	3	91	6	1	...	2	...	98	2
17	Ratnágiri	.	..	...	...	.	...	...	..	...	...	...	...	..	
18	Kánara	1	...	80	...	2	...	83	3	13	...	...	4	96	4
	Average ...	...	...	63	..	24	...	87	6	3	...	3	1	96	4
	Average A ...	33	18	6	8	5	2	72	9	1	9	7	2	82	18
	B.—Sind.														
19	Karáchi	15	4	42	16	...	2	79	8	1	...	11	1	88	12
20	Haidarabad	18	38	7	6	...	1	70	3	2	12	11	2	75	25
21	Shikárpur	17	1	37	20	...	1	76	13	2	1	7	1	91	9
22	Upper Sind Frontier	42	2	6	7	...	...	57	5	1	1	35	1	63	37
23	Thar and Párkar	...	...	...	...	...	...	...	...	...	...	...	..	...	...
	Average B ...	19	13	26	14	...	1	73	8	2	4	1	12	83	17
	Average for the Presidency...	32	18	7	9	4	2	72	9	1	8	8	2	82	18

I omit comment on the table with the remark that I propose next year to consider whether these percentages should not be worked out on the area from which superior Statistics are available only, and not on the total area for which statistics good, fair and poor are forthcoming.

I would remark how important the table shows the coarse food-grains to be, such as *kodra* in Kaira and *nágli* and *varai* in the Konkan.

A marked improvement in compilation is evident. Whereas last year the area of crops relegated to the indefinite but convenient head of "Others" was very large. The care taken by the Collectors to eliminate the column as far as possible has been very successful. In Bijápur and Dhárwár the elimination is almost complete. The Circle Inspector staff of those districts naturally gave the Collectors valuable assistance. The list of crops to which special columns are assigned, is sufficiently large to warrant almost entire elimination, except in exceptional cases.

In the Sholápur District alone a large area is devoted to "Others" in nearly all classes, as a reference to the Returns will show. Nearly 2 lákhs of acres under oil-seeds are thus indefinitely shown; but as the columns for safflower and ground-nut, both largely grown, are blank, it is clear that some misconception, which could have been avoided, was existent. Time for reference has not been given to clear off the point.

I must admit, however, that the returns are really less accurate than they appear to be; for, except where the Circle Inspector staff supervises the registration of Crop Statistics, it is certain that row crops and second crops after reaping of the principal crop are in the one case shown under the area credited to the principal crop and in the other largely neglected. The details of the various crops which come under the class "Orchard and Garden Produce" are only available from Bijápur and Dhárwár, where only the revised forms of the Manual were filled in tentatively to test their fitness. The experimental test of the new forms was very satisfactory, and it was this test which enabled me to recommend the introduction of the Revised Manual throughout the Presidency so early as the 1st August 1886. Next year the returns will necessarily be more uniform and complete. It is hoped that in Sind it will be found possible to imitate the example of the Presidency.

126. I have not attempted to reproduce the anna valuations of outturn of each of the principal crops, and it would have been very rash to have attempted any calculation of gross outturn. I have stated above (para. 78) that I have found reason to ask for the withdrawal of the formulæ designed for the estimation of outturn; but the new Manual contains what I consider a workable substitute, which will justify the entry, next year, of anna estimates of yield of each of the principal crops, though it will be some time before it will be safe to go further and make calculations of the gross outturn of even the most important products of the Presidency. The general characteristics of the season, for which the crop statistics are given, may be, however, gleaned from the analysis of the rainfall.

Return No. IV.—Irrigation.

127. This return has been submitted. It is a new return beset with difficulties, and is given for what it is worth. In Kánara the whole area of cropped land is returned as irrigated—an evident error, which cannot now be rectified In Bijápur the return is confined to the Government villages.

Return No. V.—Agricultural Stock.

128. The compilation is confined to the returns from villages and towns. The stock though to a large extent agricultural, which is to be found in cities, is not enumerated. There is probably no class of statistics less improveable by check and supervision. All that can be done must be done by means of careful forms for registration with full explanatory remarks. This has been done in the Revised Manual, according to the prescribed forms, of which the next annual census will be taken.

129. Calculations based on the reported figures and percentages taken to show the number of plough cattle per plough, the number of acres of cropped land per pair, and the like, are before me, but the inexplicable discrepancies evident deter me from making any comment.

The returns show a general decrease due

1. to the exclusion of the stock returns from villages which cannot produce statistics of crops and the like. The principle is laid down by the Government of India that a village should be excluded if it cannot give *all* the statistics required. For provincial purposes this principle might be infringed in the case of the stock return, but that it is sound. The stock returns of villages which do not keep the required forms can have little claim to accuracy;
2. to an undoubted increased mortality from the scarcity of fodder in the Deccan in the early monsoon noticed in the rainfall statistics.

B.—Rainfall.

130. The object of the Rainfall Tables (pages xxi—xxix) is to provide a short classified record of the rainfall in each of the districts which are most liable to periodical distress by reason of unseasonable or deficient rainfall. The record is designed not to give early information as to the fall of rain, but to place on permanent record the general characteristics of the season. Below the rainfall figures, therefore, short explanatory remarks are entered. The rain periods are given under their local names, because these indicate, more than any other possible division, the characteristics of the season. Each period (or Nakshatra) is from 13 to 14 days in duration. Another object is to utilize the sayings and proverbs among the people, regarding the prognostications which their traditions have led them to make.

A multiplicity of stations is avoided in this record. The exact position of the gauge is, however, indicated, so that local knowledge may make, when necessary, deductions as to the rainfall of the whole area covered by the record. Where the gauge station is different from the head-quarter station of the táluka or petha, the rain-gauge station is shown in brackets. Totals for each district are for obvious reasons not shown.

131. The transfer of the duties of compiling rainfall returns during the year to the Agricultural Department will enable me to give a more complete analysis in future, and to make the general remarks more accurate and full.

Throughout the present monsoon a monthly statement of rainfall has been shown in the *Government Gazette* with explanatory remarks. It will, therefore, be better for me to avoid reference to the season of 1886-87 in a report which deals with the former year. It may, however, be noticed that the present season is unusually favourable throughout the Presidency.

The publication of rain figures in the *Gazette* is not intended to give the earliest possible information as to the rain. That information is given in the weekly summaries prepared in the Secretariat. The design of the analysis shown in the *Gazette* is to lead up to the record, which is finally shown in this report, by periodical record of the conditions and prospects of the season.

To make the returns complete, a record of daily rainfall at the principal station of each táluka (or more stations than one where advisable) is made in my office from printed post-card returns received weekly during the monsoon months, and from monthly returns showing daily fall in the non-monsoon months.

C.—Crop Experiments.

132. These experiments, which are made by revenue officers with the object primarily of testing the incidence of the survey assessment on produce, are also designed to have a bearing on the Agricultural Statistics of the country. I will quote from the Government Resolution which reviewed my last report on Crop Experiments (Government Resolution No. 4755, dated 3rd July 1886) :—

> Besides the importance of the results in connection with the incidence of the land revenue and the condition of the peasantry, the habits of observation formed and the information about agriculture gained in making the experiments are invaluable to Gov-

ernment officers, and the evidence of accuracy, patience and intelligence or the want of them which the experiments afford, is carefully noted by Government.

The bearing of these experiments on statistics is two-fold. They give information as to outturn of various crops, and they also aid in showing the manner in which, in cases of mixed crops, the area should be apportioned among the various ingredients of the mixture.

It has been usual for me to submit the experimental results tabulated uniformly with a brief analysis. The report will again be submitted separately. The experiments in 1885-86 were confined to selected crops in selected tracts. Larger expenditure was barred by financial pressure.

VIII.—TRADE AND TRADE STATISTICS.

133. The Rail-borne and Road Traffic statistics were, as in last year, compiled by the Examiner of Guaranteed Railway Accounts. The annual report of the Examiner has been reviewed by me and submitted to Government.

The following is the brief summary of the Annual Report for 1885-86.

Rail-borne Trade.

134. In round numbers the figures show an increase in the total trade of 6 million maunds in quantity, but accompanied by a decrease in recorded value amounting to 3½ lákhs rupees. Imports and exports, *i. e.*, trade with external blocks make up 59 per cent. of the total. The remainder 41 per cent. represents the local trade or trade of internal blocks *inter se*. This ratio is practically the same as for the previous year.

	1884-85.	1885-86.
Imports	28	31
Exports	7½	10
Local Trade	27½	28
Total Million Maunds ...	63	69

The following statement shows the chief imports into, and exports from, the Bombay Presidency :—

Imports into Bombay Presidency from Sind and the rest of India.	Maunds.	Exports from Bombay Presidency to Sind and the rest of India.	Maunds.
Wheat	13,636,728	Salt	3,910,896
Other Food-grains ...	3,703,816	Cotton Piece-goods (European)	619,071
Oil-seeds	7,951,470	Do. do. (Indian) ...	225,875
Cotton (raw)	2,331,210	Coal	426,300
Dyes and Tans ...	432,548	Metals	885,553
Wool (raw)	96,621	Sugar	344,183
Opium	75,437	Kerosine oil	209,957
Provisions (Ghee) ...	106,502	Tobacco	186,297
Others	2,508,863	Jute and Gunny Bags ...	258,164
		Others	2,898,742
Total ...	30,843,195	Total ...	9,965,038

No less than 90 per cent. of imports are received by the Port of Bombay alone, and therefore chiefly for export beyond the seas. Grains show an increase of 2 million maunds. Of the total grain imports (17 million maunds) wheat is credited with 13½ millions, and is received as indicated marginally. This strong evidence of the progress of the wheat trade will be still further corroborated by the figures of the local trade. Oil-seeds give a decrease of ½ million maunds, due to lessened receipts of gingelly from Central India and Rájputána. Cotton shows as large an increase. Half comes from the Berárs. The rest about equally from the North-West Provinces and Oudh and from Rájputána and Central India.

Central Provinces	6·9
North-West Provinces and Oudh ...	2·0
Punjáb	1·8
Rájputána and Central India... ...	1·6
Berárs	1·2
Total Million Maunds ...	13·5

The sources of other principal imports are:—Dyes and Tans (myrobalans) from the Central Provinces; Opium from Rájputána and Central India; Wool from Rájputána and Central India and Punjáb; Ghee from North-West Provinces and Oudh and Central Provinces.

Of the 10 million maunds of exports, 4 millions are credited to salt against 2½ millions in the previous year. In order of importance the other chief exports were cotton goods, coal, metals, sugar and tobacco, *i. e.* articles mostly from foreign parts shipped to Bombay for the up-country demand. Salt went chiefly to the North-West Provinces and Central Provinces. Rájputána and Central India took twice as much, but the North-West Provinces and Oudh 50 times as large a quantity as in the previous year. The export of tobacco from Gujarát and Káthiawár to Rájputána and Central India declined.

Local Trade by rail.—Of the 28 million maunds included under this head, Bombay Port received 11¾ and gave 11¼ millions. The receipts were chiefly grains 2¼ including wheat 1¾, cotton and cotton goods 2½, oil-seeds and oils 3½ million maunds. Bombay despatched 5 million maunds of coal to the Mofussil.

The movements by rail from the Southern Marátha Country in cotton are worthy of special notice. Before the new line was opened, all cotton was exported by sea. In 1886 up to August the totals were by sea 24,683 bales—by rail 38,451. Of this, 27,000 bales came to Bombay after the burst of the monsoon, and thus five or six months earlier than if the sea route only were available. The gain in avoiding damage by storage in the villages during the monsoon is considerable.

Road-borne Trade.

135. The total road-borne traffic registered amounted to 4½ million maunds compared with 3¾ millions of the previous year. Last year imports made up 79 per cent of the total. This year 83 per cent. This trade is practically the traffic with Native States by the chief trade routes. Much of it is again registered as internal rail-borne traffic between the blocks of the Presidency. Thus the principal post in Sholápur is really the registration post of the imports from the Nizám's territory. It is this which explains the high place taken by Sholápur and Ahmadnagar among internal blocks as regards the amount of export traffic by rail. The cost of trade registration is given below:—

	1884 85.	1885-86.	Increase.
	Rs.	Rs.	Rs.
Rail	3,852	4,130	278
Road...	10,974	11,498	524
Total ...	14,826	15,628	802

The whole system of road traffic registration is under consideration,

I have the honour to be,

Sir,

Your most obedient Servant,

E. C. OZANNE,

Director of Agriculture.

STATISTICS

A.—AGRICULTURAL.

STATISTICS.

A.—AGRICULTURAL.

I.—Area of Available Statistics, 1885-86.

No.	District.	Number and Area of Villages exclusive of Foreign Territory, Feudatory and Tributary States.						Villages for which Statistics are available.								Villages for which Statistics are not available.					
		Government.		Alienated.		Total.		Surveyed Government Rayatwári.		Other Government.		Alienated.		Total.		Government.		Alienated.		Total.	
		No.	Acres.	No.	Acres.	No.	Acres.	No.	Acres.	No.	Acres.	No.	Acres.	No.	Acres.	No.	Acres.	No.	Acres.	No.	Acres.
	1	2		3		4		5		6		7		8		9		10		11	
	A.—Bombay Presidency Proper.																				
	I.—Gujarát.																				
1	Ahmadabad	832	2,319,167	52	123,518	884	2,442,685	448	1,057,016	384	1,262,151	52	123,518	884	2,442,685	..	....	..	....	..	....
2	Kaira	563	994,254	28	27,464	591	1,021,718	436	757,875	90	174,606	..	....	526	932,481	37	61,773	28	27,464	65	89,237
3	Panch Mahális	663½	900,384	96½	127,388	750	1,027,747	424	666,552	78	67,467	24	27,756	526	761,775	1 ½	166,345	62½	99,527	224	265,972
4	Broach	408	917,684	15	18,724	423	936,408	408	917,684	..	....	..	....	408	917,684	..	....	15	18,724	15	18,724
5	Surat	820½	1,027,219	32½	31,055	853	1,058,274	810½	1,014,984	6	10,365	4½	5,254	821	1,030,603	4	1,870	28	25,801	32	27,671
	II.—Deccan.																				
6	Khándesh	3,223	5,494,194	111½	207,439	3,334½	5,701,633	2,674½	4,615,788	317	601,780	93½	193,174	3,090	5,310,742	231½	376,629	13	14,265	244½	390,891
7	Násik	1,512	3,397,767	184	298,274	1,696	3,696,041	1,501	3,395,317	..	....	79	164,960	1,580	3,560,277	11	2,450	105	133,314	116	135,764
8	Ahmadnagar	1,297½	3,964,527	78½	239,257	1,376	4,244,784	1,225	3,694,869	61½	247,190	48	203,185	1,334½	4,145,239	11	22,468	30½	77,077	41½	99,545
9	Poona	997½	2,853,492	203½	506,069	1,201	3,361,561	995½	2,852,884	..	....	160½	467,760	1,156	3,320,644	2	608	43	40,309	45	40,917
10	Sholápur	663	2,683,324	54	223,042	717	2,906,366	663	2,653,324	..	....	34	138,791	697	2,822,115	..	....	20	84,251	20	84,251
11	Sátára	960	2,456,240	394	620,982	1,354	3,077,222	960	2,456,240	..	....	265	487,006	1,225	2,943,246	..	....	129	133,976	129	133,976
	III.—Bombay Karnátak.																				
12	Belgaum	893	2,276,142	240	544,983	1,133	2,821,125	893	2,276,142	..	....	182	536,650	1,075	2,812,792	..	....	58	8,333	58	8,333
13	Bijápur	1,011	3,205,704	162	420,504	1,173	3,626,208	1,010	3,205,517	..	....	153	379,346	1,163	3,584,863	1	187	9	41,158	10	41,345
14	Dhárwár	1,280	2,689,217	183	267,512	1,463	2,956,729	1,280	2,689,217	..	....	137	180,878	1,417	2,870,095	..	....	46	86,634	46	86,634
	IV.—Konkan.																				
15	Thána	1,882	2,392,445	102	75,315	1,984	2,467,760	1,864	2,382,184	3	2,661	25	31,011	1,892	2,415,856	15	7,600	77	44,304	92	51,904
16	Kolába	1,262	1,992,357	80	30,461	1,342	1,122,818	762	570,718	500	521,639	6	3,466	1,268	1,095,823	..	....	74	26,995	74	26,995
17	Ratnágiri	1,272½	2,384,675	63	106,916	1,335½	2,491,591	..	....	..	....	..	....	..	....	1,272½	2,384,675	63	106,916	1,335½	2,491,591
18	Kánara	1,313	2,502,400	..	....	1,313	2,502,400	1,122	2,161,205	..	....	..	....	1,122	2,161,205	191	341,195	..	....	191	341,195
	Total A. ...	20,853¾	43,551,172	2,069½	3,911,898	22,923	47,463,070	17,476¾	37,397,516	1,439½	2,787,859	1,268½	2,942,750	20,184½	43,128,125	1,937½	3,365,797	801	9,69,148	2,738½	4,334,945
	B.—Sind.																				
19	Karáchi	706	4,127,037	15	34,107	721	4,161,144	347	1,715,809	..	....	5	4,965	352	1,720,774	359	2,411,228	10	29,142	369	2,440,370
20	Haidarabad	1,135	5,330 244	56	250,399	1,191	5,580,643	860	3,504,986	..	....	..	....	960	3,504,986	275	1,825.258	56	250,3 9	331	2,075,657
21	Shikárpur	1,159	4,057,653	23	362,343	1,182	4,419,996	1,124	3,110,692	..	....	12	30,724	1,136	3,141,416	35	946,961	11	331,619	46	1,278,580
22	Upper Sind Frontier	..	1,563,022	..	35,204	..	1,598,226	228	660,620	..	....	6	27,333	234	687,953	..	902,402	..	7,871	..	910,273
23	Thar and Párkar	..	8,146,560	..	....	..	8,146,560	..	....	..	....	..	....	..	....	..	8,146,560	..	....	..	8,146,560
	Total B. ...	3,000	23,224,516	94	682,053	3,094	23,906,569	2,559	8,992,107	...	...	23	63,022	2,5 2	9,055,129	669	14,232,409	77	6,19,031	746	14,851,440
	Grand Total ...	23,853¾	66,775,688	2,163½	4,593,951	26,017	71,369,639	20,035¾	46,389,623	1,439½	2,787,859	1,291½	3,005,772	22,766¼	52,183,254	2,606½	17,598,206	878	1,588,179	3,484½	19,186,385

II.—Area, Cultivated and Uncultivated, 1885-86.

No	District.	Total Area as in columns 5, 6 and 7 of Return No. I.	Cultivated Area.							Uncultivated Area.				
			Gross Area cropped.	Deduct Area cropped more than once.	Remainder Net Area cropped.	Detail of column 5.		Add Current Fallows.	Total columns 5 and 8.	Available for cultivation.		Not available for cultivation.		Total columns 10 to 13.
						Assessed Land.	Unassessed Land.			Assessed Land.	Unassessed Land.	Forest.	Other.	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14
	A.—Bombay Presidency Proper.													
	I.—Gujarát.													
1	Ahmadabad ... Rayatwári	1,057,016	696,797	18,522	678,275	676,582	1,693	97,777	776,052	84,901	11,946	...	184,117	280,964
	Other Government	1,262,151	588,989	4,835	584,134	584,134	.....	403,429	987,563	...	6,512	....	268,076	274,588
	Alienated	123,518	57,627	3,668	53,959	53,959	.....	69,357	123,316	....	.....	....	202	202
	Total ...	2,442,685	1,343,393	27,025	1,316,368	1,314,675	1,693	570,563	1,886,931	84,901	18,458	...	452,395	555,754
2	Kaira ... Rayatwári	757,875	561,812	19,671	542,141	541,709	432	35,959	578,130	78,990	914	....	99,842	179,746
	Other Government	174,606	156,319	5,287	153,032	152,999	33	5,443	158,475	366	....	....	15,764	16,130
	Alienated	....	....	....	....	....	....	....	....	....	....	....	....	.....
	Total ...	932,481	720,131	24,958	695,173	694,708	465	41,432	736,605	79,356	914	...	115,606	195,876
3	Panch Mahals ... Rayatwári	666,552	256,960	32,194	224,766	224,766	....	34,965	259,731	112,350	198,685	45,098	50,688	406,821
	Other Government	67,467	12,855	84	12,771	12,771	....	42,836	55,607	...	.....	....	11,860	11,860
	Alienated	27,756	13,849	137	13,712	13,712	....	11,341	25,053	....	....	776	1,927	2,703
	Total ...	761,775	283,664	32,415	251,249	251,249	...	89,142	340,391	112,350	198,685	45,874	64,475	421,384
4	Broach ... Rayatwári	917,684	555,620	1,307	554,313	554,313	....	81,888	636,201	29,305	7,940	8	244,230	281,483
	Other Government	....	.....	....	....	....	....	....	.....	....	.....	....	....	....
	Alienated	....	....	....	....	....	....	....	.....	....	....	....	....	....
	Total ...	917,684	555,620	1,307	554,313	554,313	...	81,888	636,201	29,305	7,940	8	244,230	281,483
5	Surat ... Rayatwári	1,014,984	524,710	49,126	475,584	475,433	151	242,199	717,783	41,433	31,288	45,631	178,849	297,201
	Other Government	10,365	5,062	342	4,720	4,720	....	3,960	8,680	....	759	....	926	1,685
	Alienated	5,254	3,740	11	3,729	3,729	....	1,376	5,105	....	.....	....	149	149
	Total ...	1,030,603	533,512	49,479	484,033	483,882	151	247,535	731,568	41,433	32,047	45,631	179,924	299,035
	II.—Deccan.													
6	Khándesh ... Rayatwári	4,615,788	2,732,485	11,361	2,721,124	2,719,969	1,155	260,304	2,981,428	490,794	273,121	266,704	598,741	1,634,360
	Other Government	501,780	62,943	....	62,843	9,318	53,525	2,273	65,116	4,237	149,945	271,192	11,290	436,664
	Alienated	193,174	109,879	158	109,721	91,230	18,491	13,174	122,895	12,573	29,927	56	27,723	70,279
	Total ...	5,310,742	2,905,207	11,519	2,893,688	2,820,517	73,171	275,751	3,169,439	507,604	457,993	537,952	637,754	2,141,303
7	Násik ... Rayatwári	3,395,317	1,830,705	23,684	1,807,021	1,807,021	....	367,831	2,174,852	192,161	115,878	582,380	330,046	1,220,465
	Other Government	....	....	....	.....	....	....	....	.....	....	.....	....	....	....
	Alienated	164,960	99,838	1,096	98,742	98,742	....	19,372	118,114	18,317	5,881	141	22,507	46,846
	Total ...	3,560,277	1,930,543	24,780	1,905,763	1,905,763	...	387,203	2,292,966	210,478	121,759	582,521	352,553	1,267,311
8	Ahmadnagar ... Rayatwári	3,694,869	2,302,591	20,879	2,281,712	2,281,241	471	365,583	2,647,295	174,289	6,783	509,542	356,960	1,047,574
	Other Government	247,190	166,354	926	165,428	165,424	4	30,107	195,535	8,699	1,634	38	41,284	51,655
	Alienated	203,180	146,942	526	146,416	146,410	6	20,190	166,606	10,149	502	93	25,830	36,574
	Total ...	4,145,239	2,615,887	22,331	2,593,556	2,593,075	481	415,880	3,009,436	193,137	8,919	509,673	424,074	1,135,803
9	Poona ... Rayatwári	2,852,884	1,782,042	46,046	1,735,996	1,735,996	....	292,651	2,028,647	53,461	2,166	356,539	412,071	824,237
	Other Government	....	.....	....	.....	....	....	....	.....	....	....	....	....	....
	Alienated	467,760	312,138	8,399	303,739	303,739	....	66,824	370,563	3,634	....	2,686	90,877	97,197
	Total ...	3,320,644	2,094,180	54,445	2,039,735	2,039,735	...	359,475	2,399,210	57,095	2,166	359,225	502,948	921,434
10	Sholápur ... Rayatwári	2,683,324	1,977,236	25,410	1,951,826	1,951,600	226	300,724	2,252,550	125,067	6,314	76,544	222,849	430,774
	Other Government	....	.....	....	.....	.....	....	.....	.....	....	.....	....	.....	....
	Alienated	138,791	97,024	2,009	95,015	94,995	20	17,428	112,443	629	2,412	....	23,307	26,348
	Total ...	2,822,115	2,074,260	27,419	2,046,841	2,046,595	246	318,152	2,364,993	125,696	8,726	76,544	246,156	457,122

11	Sátára ...	Rayatwári	2,456,240	1,539,664	74 128	1,465,536	1 465,310	226	303,424	1,768,960	36,090	2,239	412,087	236,864	687,290
		Other Government	...	...	...	...	...	..	..	96,937	393,717	194	15,339	13,087	58,689	87,289
		Alienated	487,006	322,478	19,698	302,780	302,780	..	..	...	...	..	..	..	..	..
		Total ...	2,943,246	1,862,142	93,826	1,768,316	1,768,090	226	400,361	2,168,677	36,284	17,578	425,154	295,553	774,569
	III.—Bombay Karnátak.														
12	Belgaum ...	Rayatwári	2,276,142	1,472,131	91,144	1,380,987	1,380,981	6	244,971	1,625,958	92,639	30,900	392,046	1,44,599	650,184
		Other Government	...	...	...	...	...	..	..	88,540	400,207	46,631	..	53,104	36,708	136,443
		Alienated	536,650	328,372	16,705	311,667	311,667	..	..	...	...	..	..	..	..	..
		Total ...	2,812,792	1,800,503	107,849	1,692,654	1,692,648	6	333,511	2,026,165	139,270	30,900	435,150	181.307	786,627
13	Bijápur ...	Rayatwári	3,205,517	2,338,951	1,707	2,337,244	2,337,168	76	240,098	2,577,342	278,562	23,289	1,54,684	171,640	628,175
		Other Government	...	...	...	...	...	..	..	...	...	..	..	..	..	..
		Alienated	379,346	259,736	276	259,460	259,459	.. 1	85,193	344,653	7,988	808	..	25,897	34,693
		Total ...	3.584,863	2,598,687	1,983	2,596,704	2,596,627	77	325,291	2,921,995	286,550	24,097	154,684	197,537	662,868
14	Dhárwár ...	Rayatwári	2,689,217	1,946,668	21,425	1,925,238	1,925,167	71	222,906	2,148,144	80,357	12	276,316	194,388	541,073
		Other Government	...	...	...	...	...	..	..	...	...	..	..	..	..	..
		Alienated	180,878	107,574	1,265	106,309	104,981	1,328	35,860	142,169	15,623	.. 2	3,092	19,992	38,709
		Total ...	2,870,095	2,054,237	22,690	2,031,547	2,030,148	1,399	258,766	2,290,313	95,980	14	279,408	204,380	579,782
	IV.—Konkan.														
15	Thána ...	Rayatwári	2,382,184	514,518	5,786	508,732	508,732	..	476,286	985,013	55,119	1,31,550	640.024	570,473	1,397,166
		Other Government	2,661	742	2	740	740	..	649	1,389	...	837	219	216	1,272
		Alienated	31,011	7,550	47	7,503	7,503	.	8,538	16,041	2	2,724	5,108	7,136	14,970
		Total ...	2,415,856	522,810	5,835	516,975	516,975	...	485,473	1,002,448	55,121	135,111	645,351	577,825	1,413,408
16	Kolába ...	Rayatwári	570,718	180,219	4.559	175,660	175,660	..	110,371	286,031	8,136	72,160	41,243	163,048	284,687
		Other Government	521,639	187,224	4,555	182,669	182,669	..	113,677	296,346	2,192	6,047	71,330	145,724	225,293
		Alienated	3,466	1,174	5	1,169	1,169	..	1,208	2,377	..	608	..	481	1,089
		Total ...	1,095,823	368,617	9,119	359,498	359,498	...	225,256	584,754	10,428	78,815	112,573	309,253	511,069
17	Ratnágiri ...	Rayatwári	Not available.												
		Other Government													
		Alienated													
		Total ...													
18	Kánara ...	Rayatwári	2,161,205	218,799	10,464	208,335	208,335	..	76,581	284,916	48,899	778	1,433,041	393,571	1,876,289
		Other Government	...	...	...	..	...	..	..	..	..	..	..	..	..
		Alienated	....	....	....	..	....	..	..	....	..	..	..	..	..
		Total ...	2,161,205	218,799	10,464	208,335	208,335	...	76,581	284,916	48,899	778	1,433,041	393,571	1,876,289
	Total A.	Rayatwári	3,73,97,514	21.431,903	457,413	20,974,490	20,960,983	4,507	3,754,548	24,729,038	1,982,653	920,963	5,221,887	4,542,976	12,668,479
		Other Government	2,787,859	1.182,368	16,031	1,166.337	1,112,775	53.56	402,374	1,568,711	15,494	165,734	342,779	495,140	1,019,147
		Alienated	2,942,750	1,867,921	54,000	1,813,921	1,794,075	19,846	535,338	2,349,259	115,740	58,203	78,123	341,425	593,491
		Total ...	43,128,125	24,482,192	527,444	23,954,748	23,876,833	77,915	4,892,260	28,847,008	2,113,887	1,144,900	5,642,789	5,379,541	14,281,117
	B.—Sind.														
19	Karáchi...		1,720,774	227.449	11,332	216,117	.....	...	241,660	460,777	280,082		70,636	909,279	1,259,997
20	Haidarabad		3,504,986	495,465	3,482	491,983	.....	...	863,262	1,355.245	1,536,921		12,327	600,493	2,149,741
21	Shikárpur		3,141,416	750,487	125,952	624,535	.....	...	541.372	1,165,907	1,085,075		274,393	616,041	1,975,509
22	Upper Sind Frontier		687,953	145,312	8,163	137,149	. ....	...	224,266	361,415	228,169		32,878	65,491	326,538
23	Thar and Párkar		Not available.												
		Total B. ...	9,055,129	1,618,713	148,929	1,469,784	.....	...	1,873,560	3,343,344	3,130,247		390,234	2,191,304	5,711,785
		Grand Total ...	52,183,254	26,100,905	676,373	25,424,532	.....	...	6,765,820	32,190,352	6,389,034		6,033,023	7,570,845	19,992,902

III.—Crops, 1885-86.

No.	District.	I.—Cereals.														
		Jowári (Great Millet), Sorghum vulgare, &c.	Bájrí (Spiked Millet), Penicillaria spicata.	Paddy (Bhát), Oryza sativa.	Wheat (Gahu), Triticum æstivum.	Barley (Jav, Sátu), Hordeum vulgare.	Maize (Makai), Zea mays.	Kodra (Harik), Paspalum scrobiculatum.	Nágli (Nágli), Eleusine coracana.	Idlie, Káng (Italian Millet), Panicum Italicum.	Varai (Sáva and Barag), Panicum miliaceum, P. miliare.	Banti, Barfi, Panicum flavidum.	Bhádli, Panicum pilosum.	Amaranth (Rájgira), Amaranthus frumentaceus.	Others.	Total I.
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
	A.—Bombay Presidency Proper.															Acres.
	I.—Gujarát.															
1	Ahmadabad ... Rayatwári	148,710	115,812	67,649	101,262	13,619	3,023	13,051	1,773	140	136	2,701	.....	37	.....	467,913
	Other Government	120,340	82,615	14,276	132,581	3,127	399	3,830	350	12	22	5,480	.....	.....	.....	363,032
	Alienated	13,682	9,138	4,464	9,901	1,072	129	340	32	4	27	1,418	.....	.....	.....	40,207
	Total ...	282,732	207,565	86,389	243,744	17,818	3,551	17,221	2,155	156	185	9,599	.....	37	.....	871,152
2	Kaira ... ... Rayatwári	59,789	157,289	101,667	17,450	8,112	409	76,792	52,996	211	622	816	....	159	.....	476,312
	Other Government	17,540	46,161	13,790	884	193	7	28,255	12,689	23	347	39	.....	29	.....	119,957
	Alienated	..	..	....	..	....	..	....	....	....	..	....	....	....	..	....
	Total ...	77,329	203,450	115,457	18,334	8,305	416	105,047	65,685	234	969	855	.....	188	.. ...	596,269
3	Panch Mahás ... Rayatwári	1,689	34,197	41,660	3,241	335	66,206	13,472	10,544	1	41	8,964	284	4	3,326	183,964
	Other Government	546	2,318	4,058	213	4	156	2,174	453	..	..	482	.....	.. ..	82	10,486
	Alienated	195	4,534	3,631	112	.. ..	6	1,534	717	.. ..	..	932	.. ..	.....	1	11,662
	Total ...	2,430	41,049	49,349	3,566	339	66,368	17,180	11,714	1	41	10,378	284	4	3,409	206,112
4	Broach ... ... Rayatwari	108,378	12,471	26,326	87,425	...	12	7,595	111	5	89	.. ..	....	.. ..	77	242,489
	Other Government	..	..	.	.. ..	... ..	... ..	..	..	....	.....	.....	... ..	... ..	....	....
	Alienated	.. ..	.. ..	....	... ..	....	....	...	....	....	.....	.....	.....	.....	....	..
	Total ...	108,378	12,471	26,326	87,425	.....	12	7,595	111	5	89	.....	.. ...	.....	77	242,489
5	Surat ... ... Rayatwári	105,743	6,303	103,691	32,284	7		39,959	12,771	2	.....	1,010	109	1	554	302,434
	Other Government	1,408	10	671	67	.. ..	... ..	612	129	....	.....	....	.....	....	..	2,897
	Alienated	2,740	5	231	85	.. ..	..	183	40	.....	... ..	....	.....	....	...	3,284
	Total ...	109,891	6,318	104,593	32,436	7	.....	40,754	12,940	2	.....	1,010	109	1	554	308,615
	II.—Deccan.															
6	Khándesh ... Rayatwári	514,220	617,370	14,768	323,044	8	1,940	1,895	8,571	184	4,170	802	536	280	.....	1,467,788
	Other Government	6,516	11,416	8,778	10,629	... ..	1,718	1,496	1,619	..	1,524	2,853	423	7	.....	46,979
	Alienated	25,871	19,110	942	13,998	.... ..	132	137	146	14	249	69	43	49	....	60,760
	Total ...	546,607	647,896	24,488	347,671	8	3,790	3,528	10,336	198	5,943	3,724	1,002	336	.....	1,595,527
7	Násik ... .. Rayatwári	100,327	681,294	41,517	297,126	...	2,895	46	146,983	745	56,520	6	2,106	332	.....	1,329,897
	Other Government	.....	.....	.....	.....	.....	.....	.....	.....	..	.....	... ..	.....	.....	.....	.....
	Alienated	3,877	31,572	1,608	28,816	.. ..	48	....	5,260	5	2,356	.....	187	.. ..	.....	73,729
	Total ...	104,204	712,866	43,125	325,942	.....	2,943	46	152,243	750	58,876	6	2,293	332	.....	1,403,626
8	Ahmadnagar ... Rayatwári	841,484	773,084	7,675	265,356	240	998	80	23,225	1,537	12,758	... ..	3,144	581	355	1,930,465
	Other Government	81,371	42,253	139	12,138	27	45	1	.. ..	58	37	.....	77	16	.....	136,262
	Alienated	60,212	51,749	53	14,732	5	47	1	....	35	14	.....	4	29	.....	126,831
	Total ...	983,067	867,166	7,867	292,226	272	1,058	82	23,225	1,630	12,809	.....	3,225	626	355	2,193,608
9	Poona ... ... Rayatwári	710,309	535,122	48,386	95,459	1,133	1,938	... ..	57,459	1,237	37,436	2	3,111	236	1,090	1,492,918
	Other Government	.....	.....	.....	.....	.....	.....	.....	.....	.. ..	.....	.....	.....	.....	.....	.....
	Alienated	116,656	111,789	6,970	17,615	203	168	2	5,054	122	2,501	44	637	186	1	261,948
	Total ...	826,965	646,911	55,356	113,074	1,336	2,106	2	62,513	1,359	39,937	46	3,748	422	1,091	1,754,866

10	Sholápur ...	Rayatwári	1,327,547	158,245	14,326	55,134	1,222	14,158	3	10	1,036	1,223	.....	.....	.....	5,398	1,578,302
		Other Government	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
		Alienated	63,081	11,436	514	3,644	139	714	.....	.....	96	108	.....	.....	.....	891	80,623
		Total ...	1,390,628	169,681	14,840	58,778	1,361	14,872	3	10	1,132	1,331	.....	.....	.....	6,289	1,658,925
11	Sátára	Rayatwári	441,556	491,418	28,166	60,447	3,856	7,530	446	53,405	16,891	41,143	.....	.....	419	457	1,147,234
		Other Government ...	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
		Alienated	87,117	83,666	11,224	12,002	846	1,847	36	18,415	6,746	15,977	.....	.....	172	.....	2,38,048
		Total ...	528,673	575,084	39,390	72,449	4,702	9,377	482	71,820	25,137	57,120	.....	.....	591	457	1,385,282
	III.—Bombay Karnátak.																
12	Belgaum	Rayatwári	638,682	107,108	101,793	84,060	2,586	4,592	18	42,861	62,229	26,565	.....	.....	.....	46	1,070,540
		Other Government ...	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
		Alienated	150,693	36,599	7,096	14,777	762	1,229	.....	6,527	11,745	4,645	.....	.....	.....	1	234,074
		Total ...	789,375	143,707	108,889	98,837	3,348	5,821	18	49,388	73,974	31,210	.....	.....	.....	47	1,304,614
13	Bijápur	Rayatwári	1,397,517	238,007	6,162	138,869	3,272	739	38	60	18,362	7,664	.....	.....	1	17	1,810,708
		Other Government ...	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
		Alienated	160,159	22,559	310	12,326	434	157	.....	2	3,378	687	.....	.....	.....	16	200,028
		Total ...	1,557,676	260,566	6,472	151,195	3,706	896	38	62	21,740	8,351	.....	.....	1	33	2,010,736
14	Dhárwár	Rayatwári	639,245	5,843	132,211	213,462	46	64	48	42,812	68,450	26,776	.....	.....	25	2	1,128,984
		Other Government ...	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
		Alienated	39,097	255	17,394	7,751	.....	2	.....	4,884	4,342	1,606	.....	.....	.....	.....	75,331
		Total ...	678,342	6,098	149,605	221,213	46	66	48	47,696	72,792	28,382	.....	.....	25	2	1,204,315
	IV.—Konkan.																
15	Thána	Rayatwári	67	.....	317,665	133	.....	54	15,748	68,771	.....	31,645	.....	.....	1	.....	434,084
		Other Government ...	.....	.....	670	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	670
		Alienated	.....	.....	6,345	.....	.....	.....	.....	503	.....	193	.....	.....	.....	.....	7,041
		Total ...	67	.....	324,680	133	.....	54	15,748	69,274	.....	31,838	.....	.....	1	.....	441,795
16	Kolába	Rayatwári	.....	.....	1,38,276	6	.....	.....	2,973	14,998	.....	11,142	.....	.....	.....	.....	167,280
		Other Government ...	.....	.....	57,949	.....	.....	.....	25,437	46,048	.....	37,348	.....	.....	.....	.....	166,800
		Alienated	.....	.....	859	.....	.....	.....	.....	180	.....	45	.....	.....	.....	.....	1,094
		Total ...	.....	.....	197,084	6	.....	.....	28,310	61,239	.....	48,535	.....	.....	.....	.....	335,174
17	Ratnágiri	Rayatwári	Not available.														
		Other Government ...															
		Alienated															
		Total ...															
18	Kánara	Rayatwári	1,464	.....	174,212	.....	.....	11	.....	6,128	251	407	.....	.....	.....	.....	182,473
		Other Government ...	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
		Alienated	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
		Total ...	1,464	.....	174,212	.....	.....	11	.....	6,128	251	407	.....	.....	.....	.....	182,473
	Total A. ...	Rayatwári	70,36,727	39,33,543	13,66,140	17,74,758	34,426	1,04,537	1,72,064	5,48,473	1,72,781	2,58,337	14,371	9,290	2,076	11,322	1,54,33,785
		Other Government ...	2,27,721	1,84,573	1,00,331	1,56,512	3,351	2,325	61,505	61,306	93	38,273	8,554	500	52	82	8,47,083
		Alienated	7,24,380	3,82,412	61,651	1,35,759	3,461	4,479	2,233	41,760	26,487	23,403	2,463	871	436	910	14,14,710
		Total ...	79,87,828	45,00,828	15,28,122	20,67,029	41,248	1,11,341	2,36,102	6,46,539	1,99,361	3,26,023	25,618	10,661	2,564	12,314	1,76,95,578
	B.—Sind.																
19	Karáchi		34,025	9,888	94,666	36,864	.....	.....	.....	454	.....	.....	.....	.....	.....	4,415	180,312
20	Haidarabad...		87,257	189,669	33,715	28,264	.....	.....	.....	13	.....	.....	.....	.....	.....	1,348	345,466
21	Shikárpur		130,745	7,083	279,840	148,304	.....	.....	.....	199	.....	.....	.....	.....	.....	3,860	570,031
22	Upper Siud Frontier		60,858	2,255	9,184	9,782	.....	.....	.....	1	.....	.....	.....	.....	.....	464	83,544
23	Thar and Párkar		Not available.														
		Total B ...	3,12,885	2,10,095	4,22,405	2,23,214	.....	.....	.....	667	.....	.....	.....	.....	.....	10,087	11,79,353
		Grand Total ...	83,00,713	47,10,923	19,50,527	22,90,243	41,248	1,11,341	2,36,102	6,47,206	1,99,361	3,26,023	25,618	10,661	2,564	22,401	1,88,74,931

III.—Crops, 1885-86—*continued.*

No.	District.	II.—Pulses.													III.—Orchard and Garden Produce.					IV.—Drugs and Narcotics.						
		Turi (Pigeon Pea), Cajanus indicus.	Gram (Chana), Cicer arietinum.	Mug (Green Gram), Phaseolus mungo.	Udid (Black Gram), Phaseolus radiatus.	Math (Kidney bean), Phaseolus aconitifolius.	Val (Large-fruited Dolichos), Dolichos lablab.	Chavli (Small-fruited Dolichos), Dolichos catiang.	Kulith (Horse Gram), Dolichos uniflorus.	Field Pea (Vátáne), Pisum sativum.	Lentil (Masur), Ervum lens.	Chickling Vetch (Lákh Lánge), Lathyrus sativus.	Field Vetch (Guvár), Cyamopsis psoraloides.	Others.	Total II.	A.—Vegetables (Roots and Tubers).	B.—Green Vegetables.	C.—Green Fodder.	D.—Fruit Trees.	Total III.	Tobacco (Tambákhu), Nicotiana tabacum.	Bhang (Ján)s. (Indian Hemp), Cannabis sativa.	Opium (Ahu), Papaver somniferum.	Coffee (Kafi, Bund), Coffea Arabica.	Tea (Chaha), Thea sinensis.	Cinchona officinalis.	Others.	Total IV.
	1	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43
	A.—Bombay Presidency Proper.														Acres.					Acres.							
	I.—Gujarát.																											
1	Ahmadabad ... Rayatwári	912	8,655	6,610	2,115	26,037	243	619	202	..	..	..	3,511	..	48,904	..	..	..	..	4,154	1,010	..	..	..	..	..	..	1,010
	Other Government	566	10,544	12,401	1,053	15,653	92	322	9,520	..	..	..	1,648	..	51,798	..	..	..	..	374	357	..	..	..	..	..	..	357
	Alienated	52	663	1,446	289	1,501	..	6	230	..	..	..	164	..	4,349	..	..	..	..	312	61	..	..	..	..	..	..	61
	Total	1,530	19,862	20,457	3,456	43,191	335	945	9,952	...	...	...	5,323	...	105,051	...	...	...	...	4,840	1,428	...	...	...	...	...	...	1,428
2	Kaira ... Rayatwári	14,889	3,146	3,281	691	22,261	916	1,784	..	..	..	..	5,190	..	52,158	..	..	..	..	1,624	8,564	..	..	..	..	..	..	8,564
	Other Government	6,094	672	479	44	5,220	382	235	..	..	..	..	2,456	..	15,582	..	..	..	..	684	11,725	..	..	..	..	..	..	11,725
	Alienated	..	..	..	..	..	..	..	..	..	..	..	..	..	....	..	..	..	..	..	..	..	..	..	..	..	..	..
	Total	20,983	3,818	3,760	735	27,481	1,298	2,019	...	...	...	...	7,646	...	67,740	...	...	...	...	2,308	20,289	...	...	...	...	...	...	20,289
3	Panch Mahás ... Rayatwári	2,253	20,491	2,434	4,923	2,569	102	271	38	868	..	..	614	..	43,588	..	..	..	..	206	166	..	..	..	..	..	..	166
	Other Government	370	299	217	103	285	6	18	..	..	..	..	40	..	1,321	..	..	..	..	5	1	..	..	..	..	..	..	1
	Alienated	378	103	335	27	893	3	106	..	..	..	..	55	..	1,900	..	..	..	..	1	2	..	..	..	..	..	..	2
	Total	3,031	29,893	2,976	5,061	3,727	111	395	38	868	...	...	709	...	46,809	...	...	...	...	212	169	...	...	...	...	...	...	169
4	Broach ... Rayatwári	8,007	944	531	23	..	..	..	..	687	..	39,012	..	4,686	53,890	..	..	..	..	2,034	1,627	..	..	..	..	..	..	1,627
	Other Government	..	..	..	..	..	..	..	..	..	..	..	..	..	....	..	..	..	..	..	..	..	..	..	..	..	..	..
	Alienated	..	..	..	..	..	..	..	..	..	..	..	..	..	....	..	..	..	..	..	..	..	..	..	..	..	..	..
	Total	8,007	944	531	23	...	...	...	...	687	...	39,012	...	4,686	53,890	...	...	...	...	2,034	1,627	...	...	...	...	...	...	1,627
5	Surat ... Rayatwári	23,572	2,127	3,764	2,335	485	38,628	930	..	2,665	17	3,535	1,659	..	79,917	402	2,004	..	1,225	3,631	427		2	..	..	..	..	429
	Other Government	271	25	62	3	..	242	19	..	13	..	43	31	..	709	..	7	..	3	10	4	..	..	..	..	..	..	4
	Alienated	12	..	7	12	7	31	3	..	..	..	..	2	..	74	..	24	..	..	24	2	..	..	..	..	..	..	2
	Total	23,855	2,152	3,833	2,350	492	39,101	952	...	2,678	17	3,578	1,692	...	80,700	402	2,035	...	1,228	3,665	433		2	...	...	...	...	435
	II.—Deccan.																											
6	Khándesh ... Rayatwári	41,988	55,210	4,292	13,135	1,290	..	941	64,744	1,921	612	75	50	..	184,256	..	..	..	..	7,994	4,916	309	..	..	..	41	5,266
	Other Government	869	3,022	3	419	..	..	..	314	17	38	..	..	..	5,572	..	..	..	..	11	9	2	..	..	..	..	..	11
	Alienated	2,022	2,490	156	350	9	..	9	1,295	19	15	..	2	..	6,367	45	..	..	..	761	132	..	..	..	..	..	..	132
	Total	44,867	61,622	4,451	13,904	1,299	...	950	66,353	1,957	665	75	52	...	196,195	45	...	...	...	8,766	5,057	311	...	...	...	41	5,409
7	Násik ... Rayatwári	19,948	79,555	2,904	24,169	2,565	4	31	58,901	1,833	9,832	3,777	..	..	203,459	..	..	..	..	7,835	1,601	25	..	..	..	30	1,656
	Other Government	..	..	..	..	..	..	..	..	..	..	..	..	..	....	..	..	..	..	..	..	..	..	..	..	..	..	..
	Alienated	806	6,480	18	453	2	..	..	2,190	208	729	342	..	..	11,228	..	..	..	..	1,234	135	4	..	..	..	..	..	139
	Total	20,754	86,035	2,922	24,562	2,567	4	31	61,091	2,041	10,561	4,119	...	...	214,687	...	...	...	...	9,069	1,736	29	...	...	...	30	1,795
8	Ahmadnagar ... Rayatwári	26,573	105,774	5,441	1,143	13,271	766	28	37,090	1,412	392	76	..	..	191,966	..	..	..	..	4,715	7,771	721	..	..	..	..	..	8,492
	Other Government	2,523	7,051	586	48	987	..	1	3,869	48	133	102	..	..	15,348	..	..	..	..	278	317	81	..	..	..	..	..	398
	Alienated	1,437	7,329	54	..	756	..	1	1,936	..	..	..	..	..	11,513	..	..	..	..	190	305	226	..	..	..	..	..	533
	Total	30,533	1,20,154	6,081	1,191	15,014	766	30	42,895	1,460	525	178	...	...	218,827	...	...	...	...	4,583	8,393	1,030	...	...	...	...	...	9,423
9	Poona ... Rayatwári	13,037	51,684	617	3,445	15,165	1,734	853	19,920	2,143	1,071	..	..	..	109,667	..	..	64	..	19,523	1,288	18	..	..	..	..	..	1,306
	Other Government	..	..	..	..	..	..	..	..	..	..	..	..	..	....	..	..	..	..	..	..	..	..	..	..	..	..	..
	Alienated	2,753	9,906	96	1,037	2,979	135	464	3,921	341	58	..	..	..	21,690	..	38	..	..	5,196	85	..	..	..	..	..	..	85
	Total	15,799	61,590	713	4,480	18,144	1,869	1,317	23,841	2,484	1,129	...	...	...	131,357	...	102	...	...	24,719	1,373	18	...	...	..	...	...	1,391

10	Sholápur ...	Rayatwári ..	46,121	63,439	1,892	275	..	..	..	4,349	11	36	222	..	13,301	129,646	..	..	..	..	5,070	3,068	43	..	7	..	..	..	8,111
		Other Government ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
		Alienated ..	902	3,476	36	1	..	..	..	727	1	..	..	..	757	5,900	..	..	..	..	315	112	..	..	..	..	..	..	112
		Total ...	47,023	66,915	1,928	276	...	...	...	5,076	12	36	222	...	14,058	135,546	...	...	...	...	5,385	3,180	43	...	...	...	...	...	3,223
11	Sátára	Rayatwári ..	44,274	67,920	8,587	18,283	53,134	2,483	198	43,593	1,280	411	..	..	..	240,163	..	..	..	..	7,145	9,017	401	..	2	..	..	..	9,420
		Other Government ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
		Alienated ..	10,754	15,518	1,929	5,905	6,865	594	88	8,188	530	258	..	..	..	50,579	..	..	..	..	1,701	1,105	10	..	..	..	..	..	1,115
		Total ...	55,028	83,438	10,516	24,188	59,999	3,077	236	51,781	1,810	669	...	...	...	290,742	...	...	...	...	8,846	10,122	411	...	2	...	...	...	10,535
	III.—Bombay Karnátak.																												
12	Belgaum... ...	Rayatwári ..	51,506	39,446	7,217	1,535	4,297	5,313	113	43,616	5,836	5,093	..	..	..	164,062	..	..	..	..	7,081	16,746	..	..	77	..	..	..	16,823
		Other Government ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
		Alienated ..	13,036	8,727	3,668	95	2,605	1,101	102	9,203	161	180	..	..	..	38,881	..	..	..	..	1,875	3,662	..	..	22	..	..	..	5,684
		Total ...	64,632	48,173	10,885	1,630	6,902	6,417	215	52,819	5,997	5,273	...	...	...	202,943	...	...	...	...	8,956	20,408	...	...	99	...	...	...	20,507
13	Bijápur	Rayatwári ..	64,533	50,537	28,948	..	3,791	3,476	618	19,176	18	..	..	..	1	172,093	..	..	..	..	5,522	3,146	..	..	..	..	..	..	8,146
		Other Government ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
		Alienated ..	6,991	4,345	3,174	1	145	497	341	2,633	19	..	..	..	..	18,046	..	..	..	..	767	221	..	..	..	..	..	..	221
		Total ...	71,424	54,882	32,122	1	3,936	3,973	1,954	21,809	37	...	...	...	1	190,139	...	...	...	...	6,289	3,367	...	...	...	...	...	...	3,367
14	Dhárwár ...	Rayatwári ..	56,335	44,438	43,750	3,129	11,599	4,865	455	42,274	534	78	..	..	1	208,958	..	..	..	..	9,820	1,652	..	..	..	..	..	8	1,660
		Other Government ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
		Alienated ..	3,560	1,264	2,690	198	386	277	46	3,168	53	..	..	..	..	11,642	..	..	..	..	1,006	92	..	..	..	..	..	..	92
		Total ...	59,895	45,702	46,440	3,327	11,985	5,142	501	46,042	587	78	...	...	1	219,700	...	...	...	...	10,826	1,744	...	...	...	..	...	8	1,752
	IV.—Konkan.																												
15	Thána	Rayatwári ..	7,309	3,228	794	24,146	..	4,164	3,567	1,056	254	2	157	..	..	44,677	..	..	..	..	5,233	1	..	..	..	..	..	..	1
		Other Government ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	72	..	..	..	..	..	..	..	..
		Alienated	101	..	..	135	..	10	15	..	..	..	..	..	..	261	..	..	..	..	37	..	..	..	..	..	..	..	..
		Total ...	7,410	3,228	794	24,281	...	4,174	3,582	1,056	254	2	157	...	...	44,938	...	...	...	...	5,342	1	...	...	...	...	...	...	1
16	Kolába	Rayatwári ..	523	2,396	903	1,045	..	3,539	38	..	..	..	..	..	..	8,449	64	257	..	1,933	2,274	..	..	..	..	..	..	..	
		Other Government ..	2,004	1,258	1,752	7,006	..	2,849	..	..	..	..	..	..	..	14,809	18	15	..	..	53	..	..	..	..	..	..	..	..
		Alienated	..	43	..	..	..	5	..	..	..	..	..	..	..	48	..	32	..	..	32	..	..	..	..	..	..	..	..
		Total ...	2,532	3,697	2,655	8,051	...	6,393	38	...	...	...	...	...	...	23,366	82	304	...	1,933	2,319	...	...	...	...	...	...	...
17	Ratnágiri ...	Rayatwári ..																											
		Other Government ..	Not available.																										
		Alienated																											
		Total ...																											
18	Kánara	Rayatwári ..	211	190	687	1,120	..	..	2	1,829	372	..	..	..	1,038	5,449	..	..	..	..	18,164	..	..	..	82	..	..	..	
		Other Government ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
		Alienated ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
		Total ...	211	190	687	1,120	...	...	2	1,829	372	...	...	...	1,038	5,449	...	...	...	...	18,164	...	...	...	82	...	..	...	82
	Total A. ...	Rayatwári ..	4,22,114	6,08,180	1,22,642	1,01,455	1,56,464	66,433	11,443	3,37,388	19,834	17,548	46,854	11,024	19,027	1,940,402	..	..	..	..	111,405	61,000	1,519	..	161	..	..	79	62,759
		Other Government ..	12,687	23,771	15,500	8,678	22,125	3,571	593	13,703	73	171	145	4,175	..	105,199	..	..	..	..	1,467	12,413	83	..	..	..	..	..	12,496
		Alienated ..	42,764	60,344	13,603	8,503	16,143	2,656	1,129	23,491	1,331	1,240	342	223	757	182,478	..	..	..	..	13,451	5,914	242	..	22	..	..	..	6,178
		Total ...	4,77,505	6,92,295	1,51,751	1,18,636	1,94,737	72,660	13,167	384,582	21,244	18,955	47,341	15,422	19,784	2,228,079	...	...	...	...	126323	79,327	1,844	...	183	...	...	79	81,433
	B.—Sind.																												
19	Karáchi		...	3,550	...	...	...	...	...	...	...	...	...	...	13,703	17,253	...	...	...	...	2,455	198	...	...	...	...	...	343	541
20	Haidarabad		1	3,262	...	...	...	...	...	...	...	...	...	...	...	13,151	16,414	...	...	...	11,577	3,153	...	...	...	...	...	19	3,172
21	Shikárpur		...	24,417	...	...	...	...	...	...	...	...	...	...	...	73,036	97,453	...	...	...	11,897	4,361	...	...	...	...	...	191	4,552
22	Upper Sind Frontier		...	2,937	...	...	...	...	...	...	...	...	...	...	...	4,554	7,491	...	...	...	694	45	...	...	...	...	...	4	49
23	Thar and Párkar		Not available.																										
	Total B ...		1	34,166	...	...	...	...	...	...	...	...	...	...	1,04,444	138,611	...	...	...	...	26,623	7,757	...	...	...	..	...	557	8,314
	Grand Total ...		4,77,506	7,26,461	1,51,751	1,18,636	1,94,737	72,660	13,167	384,582	21,244	18,955	47,341	15,422	1,24,228	2,366,690	...	...	...	...	152946	87,084	1,844	...	183	...	...	636	89,747

III.—Crops, 1885-86—*continued.*

No.	District.	V.—Condiments and Spices.																	VI.—Starches.			VII.—Sugar.		
		Cardamom (Veldoda), Elettaria cardamomum.	Chillies (Mirchya), Capsicum frutescens.	Ginger (Ale), officinale.	Black Pepper (Mire), Piper nigrum.	Betel-leaves (Pano), Piper-betel.	Betelnut (Supári), Areca-catechu.	Turmeric (Halad), Curcuma longa.	Fennel (Hadi-ahep), Pimpinella anisum.	Dill-seed (Shlant-ahep), Anethum sowa.	Coriander (Dhane), Coriandrum sativum.	Cumin (Jire), Cuminum cyminum.	Ajwan-seed (Ova), Ptychotus ajowan.	Fenugreek (Methi), Trigonella foenumgræcum.	Common Mustard (Hdi), Sinapis Indica.	Garlic (Lasun), Allium sativum.	Others.	Total V.	Arrowroot, Maranta arundinacea, Curcuma angustifolia, &c.	Others.	Total VI.	Sugarcane (Us, Sherdi), Saccharum officinarum.	Others.	Total VII.
	1	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66
	A.—Bombay Presidency Proper.																							
	I.—Gujarát.																	Acres.			Acres.			Acres.
1	Ahmadabad ... Rayatwári	...	1,890	438	...	...	...	...	...	...	...	22	50	...	9	116	...	2,525	...	...	...	2,106	...	2,106
	Other Government	...	207	1	...	...	...	...	...	...	...	...	...	...	...	...	...	208	...	...	...	307	...	307
	Alienated	...	29	1	...	...	...	...	...	...	...	...	...	...	...	45	...	75	...	...	...	186	...	186
	Total	...	2,126	440	...	...	...	...	...	...	...	22	50	...	9	161	...	2,808	...	...	...	2,599	...	2,599
2	Kaira ... ... Rayatwári	...	1,200	165	...	...	...	19	...	7	...	1,078	167	126	27	39	...	2,827	...	...	...	885	...	885
	Other Government	...	425	131	...	...	...	5	...	...	...	1,947	1	13	...	25	...	2,547	...	...	...	865	...	865
	Alienated	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	.....	...	...	...	.....	...	...
	Total	...	1,625	296	...	...	...	23	...	7	...	3,025	168	139	27	64	...	5,374	...	...	...	1,750	...	1,750
3	Panch Mahás ... Rayatwári	...	341	5	...	...	...	1	...	3	...	43	...	...	...	16	...	409	...	...	...	341	...	341
	Other Government	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	..	...	...	...	23	...	23
	Alienated	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	....	...	...	...	22	...	22
	Total	...	341	5	...	...	...	1	...	3	...	43	...	...	...	16	...	409	...	...	...	386	...	386
4	Broach ... ... Rayatwári	...	218	48	...	...	...	...	...	...	...	...	...	...	23	...	93	332	...	...	...	123	...	123
	Other Government	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	.....	...	...	...	.....	...	...
	Alienated	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	.....	...	...	...	.....	...	...
	Total	...	218	48	...	...	...	...	...	...	...	...	...	...	23	...	93	332	...	...	...	123	...	123
5	Surat ... ... Rayatwári	...	594	188	...	...	...	82	...	16	15	...	14	...	24	69	7	1,009	...	...	...	6,523	...	6,523
	Other Government	...	16	...	...	...	...	...	...	...	...	...	...	...	...	...	...	16	...	...	...	72	...	72
	Alienated	...	37	...	...	...	...	...	...	...	...	...	...	...	...	...	...	37	...	...	...	15	...	15
	Total	...	647	188	...	...	...	82	...	16	15	...	14	...	24	69	7	1,062	...	...	...	6,610	...	6,610
	II.—Deccan.																							
6	Khándesh ... Rayatwári	...	10,776	8	...	244	...	1,518	3,201	2,713	6,110	...	219	...	484	514	...	25,787	...	...	...	3,343	...	3,343
	Other Government	...	9	...	...	...	...	...	...	...	...	...	...	...	...	6	...	15	...	...	...	1	...	1
	Alienated	...	337	...	...	...	...	13	213	120	57	...	41	...	80	44	...	903	...	...	...	103	...	103
	Total	...	11,122	8	...	244	...	1,531	3,414	2,833	6,167	...	260	...	564	564	...	26,707	...	...	...	3,447	...	3,447
7	Násik ... ... Rayatwári	...	5,508	16	...	139	...	93	38	28	7	...	...	...	36	362	...	6,227	...	...	...	8,044	...	8,044
	Other Government	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	.....	...	...	...	.....	...	...
	Alienated	...	530	...	...	40	...	...	...	...	3	...	...	...	...	41	...	614	...	...	...	860	...	860
	Total	...	6,038	16	...	179	...	93	38	28	10	...	...	...	36	403	...	6,841	...	...	...	8,904	...	8,904
8	Ahmadnagar ... Rayatwári	...	5,900	...	...	300	...	...	...	2	10	...	...	...	6	29	...	6,247	...	...	...	3,532	...	3,532
	Other Government	...	347	...	...	4	...	...	...	...	...	...	...	...	...	...	...	351	...	...	...	179	...	179
	Alienated	...	329	...	...	3	...	...	...	...	...	...	...	...	...	4	...	336	...	...	...	138	...	138
	Total	...	6,576	...	...	307	...	...	...	2	10	...	...	...	6	33	...	6,934	...	...	...	3,849	...	3,849
9	Poona ... ... Rayatwári	...	11,106	8	..	393	...	92	...	...	469	...	...	...	...	754	...	12,822	...	...	...	4,896	...	4,896
	Other Government	...	.....	..	..	...	...	...	...	...	...	...	...	...	...	...	...	.....	...	...	...	.....	...	...
	Alienated	...	1,983	1	..	414	...	35	...	...	4	...	...	...	...	121	...	2,558	...	...	...	986	...	986
	Total	...	13,089	9	...	807	...	127	...	...	473	...	...	...	..	875	...	15,380	...	...	...	5,882	...	5,882

10	Sholápur	Rayatwári	...	...	7,313	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	2,332	9,645	...	...	...	2,945	...	2,945
		Other Government	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Alienated	...	...	339	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	42	381	...	...	...	112	...	112
		Total	...	...	7,652	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	2,374	10,026	...	...	...	3,057	...	3,057
11	Sátára	Rayatwári	...	...	10,666‡	26	..	327	2	3,132	276	...	285	...	32	..		264	35	15,054	...	...	...	9,584	...	9,584
		Other Government	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Alienated	...	...	2,910	47	...	51	...	823	43	...	72	..	37	...	...	64	...	4,047	...	...	...	2,950	...	2,950
		Total	...	...	13,576	73	...	378	2	3,955	319	...	357	...	69	...	9	328	35	19,101	...	...	...	12,534	...	12,534
	III.—Bombay Karnátak.																														
12	Belgaum	Rayatwári	...	...	13,715	...	...	79	...	181	61	...	992	...	...	...	177	586	...	15,791	...	...	...	6,272	...	6,272
		Other Government	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Alienated	...	...	3,434	..	...	91	2	63	45	...	598	...	...	...	...	179	...	4,412	...	...	...	2,153	...	2,153
		Total	...	...	17,149	...	...	170	2	244	106	...	1,590	...	...	...	177	765	...	20,203	...	...	...	8,425	...	8,425
13	Bijápur	Rayatwári	...	...	4,128	...	...	51	...	8	1	...	19	...	...	1	2	130	...	4,340	...	..	...	1,234	...	1,234
		Other Government	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Alienated	...	...	413	...	...	3	...	3	...	...	3	..	...	...	...	8	...	430	...	...	...	125	...	125
		Total	...	...	4,541	...	...	54	...	11	1	...	22	...	...	1	2	138	...	4,770	...	...	...	1,359	...	1,359
14	Dhárwár	Rayatwári	...	...	51,934	2	..	1,094	472	37	8	1	530	...	31	15	78	719	11	54,932	...	...	...	4,198	..	4,198
		Other Government	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Alienated	...	...	1,839	...	..	63	64	...	...	..	4	...	...	...	1	...	...	1,971	...	...	...	467	..	467
		Total	...	...	53,773	2	..	1,157	536	37	8	1	534	...	31	15	79	719	11	56,903	...	...	...	4,665	...	4,665
	IV.—Konkan.																														
15	Thána	Rayatwári	...	...	391	152	...	152	31	64	...	...	528	...	..	...	6	2	...	1,326	...	...	...	1,541	...	1,541
		Other Government	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Alienated	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Total	...	...	391	152	...	152	31	64	...	...	528	...	...	...	6	2	...	1,326	...	...	...	1,541	...	1,541
16	Kolába	Rayatwári	...	...	42	...	...	21	351	...	...	...	52	...	...	...	...	...	...	466	...	...	...	61	...	61
		Other Government	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	18	...	18
		Alienated	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Total	...	...	42	...	...	21	351	...	...	...	52	...	...	...	...	...	...	466	...	...	...	79	...	79
17	Ratnágiri	Rayatwári	...	...	Not available.																										
		Other Government	...	...																											
		Alienated	...	...																											
		Total	...	...																											
18	Kánara	Rayatwári	...	539	248	5	811	...	...	...	...	...	...	...	...	...	...	...	...	6,947	8,550	...	...	...	3,262	...	3,262
		Other Government	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Alienated	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Total	...	539	248	5	811	...	...	...	...	...	...	...	...	...	...	...	...	6,947	8,550	...	...	...	3,262	...	3,262
	Total A	Rayatwári	...	539	1,25,970	1,061	811	2,890	856	5,226	3,585	*2,770	9,017	1,143	513	142	881	3,600	9,425	1,68,339	...	...	...	58,890	...	58,890
		Other Government	...	...	1,004	132	...	4	...	5	...	...	...	1,947	1	13	...	31	...	3,137	...	...	...	1,465	...	1,465
		Alienated	...	...	12,190	49	...	665	66	937	301	120	741	...	78	...	81	506	42	15,766	...	...	...	8,117	...	8,117
		Total	...	539	1,39,154	1,242	811	3,469	922	6,168	3,886	2,890	9,758	3,090	592	155	962	4,137	9,467	1,87,242	...	...	...	68,472	...	68,472
	B.—Sind.																														
19	Karáchi	... ...	...	...	.....	...	...	...	...	...	...	...	...	...	...	...	...	...	136	136	...	...	...	450	...	450
20	Haidarabad	... ...	...	...	.....	...	...	...	...	...	...	...	...	...	...	...	...	...	32	32	...	...	3	537	...	537
21	Shikárpur	... ...	...	...	.....	...	...	...	...	...	...	...	...	...	...	...	...	...	2,037	2,037	...	...	4	706	...	706
22	Upper Sind Frontier	... ...	...	...	.....	...	...	...	...	...	...	...	...	...	...	...	...	...	113	113	...	...	1	15	...	15
23	Thar and Párkar	... ...	...	Not available.																											
		Total B	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	2,318	2,318	...	...	8	1,708	...	1,708
		Grand Total	...	539	1,39,154	1,242	811	3,469	922	6,168	3,886	2,890	9,758	3,090	592	155	962	4,137	11,785	1,89,560	...	...	8	70,180	...	70,180

No.	District.	VIII.—Oil Seeds.										IX.—Dyes.					X.—Fibres.							Gross Area cropped.	Deduct Area cropped more than once.	Remainder Net Area cropped.
		Sesame (Til), Sesamum Indicum.	Linseed (Alsi, Jawas), Linum usitatissimum.	Castor-oil Seed (Erandya) Ricinus communis.	Safflower Seed (Kardai), Carthamus tinctorius.	Rape (Shirus), Brassica rapa.	Niger-seed (Khurásani), Verbesina sativa.	Ground-nut (Bhuimug), Arachis hypogea.	Cocoanut (Khobara) Cocos nucifera.	Others.	Total VIII.	Indigo (Nil, Gnli) Indigofera tinctoria.	Safflower (Kusumba), Carthamus Persicus.	Morinda (Ai), Surangi), Morinda citrifolia.	Others.	Total IX.	Cotton (Kápus), Gossypium herbaceum.	Bombay Hemp (San, Tag), Crotolaria juncea.	Hemp (Ambádi, Sheria), Hibiscus cannabinus.	Jute.	Rhea.	Others.	Total X.			
	1	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91
	A.—Bombay Presidency Proper.										Acres.					Acres.							Acres.	Acres.	Acres.	Acres.
	I.—Gujarát.																									
1	Ahmadabad... Rayatwári ..	14,028	771	6,944	..	259	..	..	..	..	22,000	190	593	..	..	783	146,547	855	..	.	..	..	147,402	696,797	18,522	678,275
	Other Government.	11,965	207	908	..	..	..	..	..	..	13,100	..	9	..	..	9	159,179	605	..	...	..	..	159,784	588,969	4,835	584,134
	Alienated	537	11	484	..	2	..	..	..	..	1,034	..	..	..	..	..	11,369	34	..	..	..	..	11,403	57,627	3,668	53,959
	Total ..	26,548	989	8,336	...	261	...	...	...	...	36,134	190	602	...	...	792	317,095	1,494	. .	...	.	...	318,589	1,343,393	27,025	1,316,368
2	Kaira ... Rayatwári	5,091	32	4,196	18	20	..	..	..	..	9,357	82	2,782	..	..	2,864	6,336	20	865	..	..	..	7,221	561,812	19,671	542,141
	Other Government.	1,888	..	492	23	..	..	..	..	..	2,403	84	183	..	..	267	3,881	..	408	..	..	..	4,289	158,319	5,287	153,032
	Alienated . ..	.	..	..	..	..	..	..	..	..	....	..	..	..	..	..	....	..	..	..	..	..	....	....	....	.. .
	Total ...	6,979	32	4,688	41	20	...	...	...	...	11,760	166	2,965	...	...	3,131	10,217	20	1,273	.	..	...	11,510	720,131	24,958	695,173
3	Panch Mahals Rayatwári	25,681	4	792	..	116	..	..	..	..	26,593	..	..	..	..	..	85	1,282	..	..	..	327	1,694	256,966	32,194	224,766
	Other Government.	240	..	289	..	..	..	..	..	..	529	..	..	..	..	..	488	..	..	..	..	1	489	12,855	84	12,771
	Alienated	28	..	199	..	..	..	..	..	..	227	..	..	..	..	..	.. .	..	..	..	..	35	35	13,849	137	13,712
	Total ...	25,949	4	1,280	...	116	...	...	...	...	27,349	...	...	...	...	...	573	1,282	...	...	...	363	2,218	283,664	32,415	251,249
4	Broach ... Rayatwári ..	9,549	..	..	..	..	..	..	..	1,734	11,283	168	17	..	..	185	243,568	39	..	..	..	..	243,607	555,620	1,307	554,313
	Other Government.	..	..	..	..	..	..	..	..	..	....	..	..	..	..	..	....	..	..	..	..	..	....	....	..	....
	Alienated . ..	..	..	..	..	..	..	..	..	..	....	..	..	..	..	..	....	..	..	..	..	..	....	....	..	..
	Total ...	9,549	...	...	...	...	...	...	...	1,734	11,283	168	17	...	...	185	243,568	39	...	...	...	...	243,607	555,620	1,307	554,313
5	Surat... ... Rayatwari . ..	2,377	2	34,603	..	8	91	61	..	..	37,142	..	98	23	..	121	91,679	..	1,824	..	..	..	93,503	524,710	49,126	475,584
	Other Government.	11	..	419	..	..	..	..	..	..	430	..	.	..	..	...	923	.	2	..	..	..	925	5,062	342	4,720
	Alienated ..	1	..	73	..	..	..	..	..	..	74	..	..	..	..	..	229	..	1	..	..	..	230	3,740	11	3,729
	Total ...	2,389	2	35,095	...	8	91	61	...	...	37,646	...	98	23	...	121	92,831	...	1,827	...	...	...	94,658	533,512	49,479	484,033
	II.—Deccan.																									
6	Khándesh ... Rayatwári	192,093	171,515	1,414	2,701	..	5,146	8,096	..	..	370,967	3,428	322	..	3,525	7,275	637,484	488	1,837	..	..	..	639,809	2,732,485	11,361	2,721,124
	Other Government.	4,730	1,264	..	13	..	1,453	77	..	..	7,587	..	..	..	..	..	1,288	379	..	..	..	..	2,667	62,843	..	62,843
	Alienated	6,852	3,901	9	1,378	..	46	44	..	..	12,230	34	..	..	..	34	28,434	52	101	..	..	..	28,587	109,879	158	109,721
	Total ...	193,725	176,680	1,423	4,092	...	6,645	8,219	...	...	390,784	3,462	322	...	3,525	7,309	668,206	919	1,938	...	...	...	671,063	2,905,207	11,519	2,893,688
7	Násik ... Rayatwári	37,041	84,576	4,026	10,886	1	108,981	22,354	..	..	267,865	..	695	..	..	695	2,620	2,359	42	..	..	6	5,027	1,830,705	23,684	1,807,021
	Other Government.	..	..	..	..	..	..	..	..	..	....	..	..	..	..	..	....	..	..	..	..	..	....	....	..	....
	Alienated	1,136	4,044	128	536	..	5,035	1,000	..	..	11,879	..	30	..	..	30	....	125	..	..	..	..	125	99,838	1,096	98,742
	Total ...	38,177	88,620	4,154	11,422	1	114,016	23,354	...	...	279,744	...	725	...	...	725	2,620	2,484	42	...	...	6	5,152	1,930,543	24,780	1,905,763
8	Ahmadnagar . Rayatwári ..	12,266	17,017	256	66,036	..	29,218	7,680	..	..	132,473	..	6,092	..	..	6,092	14,564	130	4,215	..	..	..	19,209	2,302,591	20,879	2,281,712
	Other Government.	1,563	1,765	6	6,753	..	1,147	130	..	..	11,394	..	105	..	..	105	1,717	2	320	..	..	..	2,039	166,354	928	165,428
	Alienated	1,573	1,435	3	3,302	..	43	42	..	..	6,398	..	..	..	..	..	918	8	27	..	..	..	953	146,942	526	146,416
	Total ..	15,402	20,217	265	76,121	...	30,408	7,852	...	...	150,265	...	6,197	...	...	6,197	17,499	140	4,562	...	...	...	22,201	2,615,887	22,331	2,593,556
9	Poona ... Rayatwári	27,458	718	34	90,235	..	13,960	6,079	..	..	138,484	..	..	..	..	..	230	466	1,730	..	..	..	2,426	1,782,942	46,046	1,735,996
	Other Government.	..	..	..	..	..	..	..	..	..	....	..	..	..	..	..	....	..	..	..	..	..	....	....	....	....
	Alienated	4,348	..	34	35	2,635	..	2,918	2,427	..	..	19,447	..	..	..	..	....	93	135	..	..	..	228	312,138	8,200	303,739
	Total ...	31,806	802	69	99,870	...	16,878	8,506	...	...	157,931	...	...	...	...	...	230	559	1,865	...	...	...	2,654	2,094,180	54,445	2,039,735

10	Sholápur	Rayatwári	2,580	31,407	..	..	..	..	..	..	191,211	225,698	..	..	425	..	425	6,488	106	15,458	..	..	..	22,052	1,977,238	25,410	1,951,828
		Other Government	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
		Alienated	605	1,700	..	..	..	..	..	..	7,092	9,397	..	..	..	..	..	199	..	142	..	..	..	341	97,024	2,009	95,015
		Total	3,185	33,745	...	...	...	...	...	...	198,403	235,336	...	...	425	...	425	6,631	106	15,600	...	...	...	22,337	2,074,260	27,419	2,046,841
11	Sátára	Rayatwári	315	2,316	..	..	..	12,005	39,722	758	..	62,106	..	22,050	..	..	22,050	15,229	3,096	7,553	..	..	..	25,908	1,539,664	74,128	1,465,536
		Other Government	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
		Alienated	94	683	..	..	..	5,275	11,462	200	..	17,494	..	3,559	..	..	3,559	1,011	743	1,321	..	..	..	2,965	322,478	19,668	302,730
		Total	409	2,839	...	...	...	24,280	51,184	938	...	79,600	...	26,609	...	...	26,609	16,240	3,839	8,874	...	...	...	28,893	1,862,142	93,826	1,768,316
		III.—Bombay Karnátak.																												
12	Belgaum	Rayatwári	7,515	5,154	..	30,957	..	1,416	9,619	12,913	..	67,574	..	..	..	..	..	119,631	1,780	2,577	..	..	..	123,988	1,472,181	91,144	1,380,987
		Other Government	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
		Alienated	713	572	..	12,682	..	156	1,715	2,257	..	18,475	..	..	..	..	..	23,742	570	506	..	..	..	24,818	328,372	16,705	311,667
		Total	8,228	5,726	...	43,639	...	1,572	11,334	15,550	...	86,049	...	...	...	...	...	143,373	2,350	3,083	...	...	...	148,806	1,800,553	107,849	1,692,654
13	Bijápur	Rayatwári	15,107	72,227	6,130	78,324	..	16,456	36	..	..	188,199	..	..	..	..	..	147,162	49	6,496	..	..	..	153,707	2,338,951	1,707	2,337,244
		Other Government	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
		Alienated	1,167	9,433	755	7,408	..	1,510	..	..	..	20,313	..	..	..	..	..	19,225	4	547	..	..	..	19,786	259,736	276	259,460
		Total	16,274	81,660	6,894	85,702	...	17,966	36	...	...	208,532	...	...	...	...	...	166,387	53	7,045	...	...	...	173,493	2,598,687	1,983	2,596,704
14	Dhárwár	Rayatwári	6,131	23,635	18,728	33,463	..	2,500	3	..	..	84,464	..	..	..	..	..	449,191	172	5,194	..	..	..	454,547	1,946,883	21,425	1,925,458
		Other Government	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
		Alienated	97	946	1,043	1,334	..	135	..	..	..	3,555	..	..	..	..	..	13,226	15	280	..	..	..	13,516	107,574	1,265	106,309
		Total	6,228	24,581	19,766	34,797	...	2,644	3	...	...	88,019	...	...	...	...	...	462,417	187	5,473	...	...	...	468,057	2,054,457	22,690	2,031,767
		IV.—Konkan.																												
15	Thána	Rayatwári	8,296	1	2,854	2	41	11,040	..	..	83	22,307	..	..	..	..	..	..	3,462	1,887	..	..	..	5,349	514,518	6,788	508,732
		Other Government	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	742	2	740
		Alienated	17	..	..	..	..	180	..	..	..	197	..	..	..	..	..	..	8	6	..	..	..	14	7,550	47	7,503
		Total	8,303	1	2,854	2	41	11,220	...	...	83	22,504	...	...	...	...	...	...	3,470	1,893	...	...	...	5,363	522,810	6,835	516,975
16	Kolába	Rayatwári	1,366	..	4	..	..	..	..	..	187	1,557	..	..	..	..	..	..	150	2	..	..	..	152	180,219	4,559	175,660
		Other Government	5,449	..	..	..	..	..	..	..	..	5,449	..	..	..	..	..	..	56	..	..	..	..	56	187,224	4,555	182,669
		Alienated	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	....	1,174	5	1,169
		Total	6,814	...	4	...	...	...	...	...	187	7,006	...	...	...	...	...	...	206	2	...	...	...	208	368,617	9,119	359,498
17	Ratnágiri	Rayatwári	Not available.																											
		Other Government																												
		Alienated																												
		Total																												
18	Kánara	Rayatwári	172	..	..	..	..	..	..	..	468	640	..	..	..	..	..	..	85	91	..	..	3	179	218,799	10,464	208,335
		Other Government	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
		Alienated	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
		Total	172	...	...	...	...	...	...	...	468	640	...	...	...	...	...	...	85	91	...	...	3	179	218,799	10,464	208,335
	Total A	Rayatwári	357,304	409,917	70,985	312,592	445	307,822	93,662	13,661	189,783	1,666,101	3,986	33,649	448	3,525	41,608	1,801,064	14,539	49,733	..	..	338	1,965,736	21,431,903	457,413	20,974,490
		Other Government	25,915	3,238	2,114	6,519	..	2,600	207	..	..	40,591	84	267	..	..	351	166,476	1,042	730	..	..	1	170,249	1,182,368	18,081	1,164,287
		Alienated	16,918	22,742	2,739	30,335	2	15,246	16,650	2,257	7,092	120,181	34	3,559	..	..	3,593	98,357	1,652	2,965	..	..	35	103,009	1,807,921	54,009	1,753,912
		Total	400,137	435,901	84,838	355,686	447	325,720	110,499	16,488	200,875	1,830,581	3,986	37,535	448	3,525	45,494	2,147,597	17,233	53,488	...	...	372	2,218,990	24,482,192	527,444	23,954,748
		B.—Sind.																												
19	Karáchi		3,484	...	...	...	...	...	...	...	22,064	25,548	...	...	...	98	98	612	...	...	...	...	44	656	227,449	11,332	216,117
20	Haidarabad		36,168	11	...	...	...	...	12,048	...	5,451	53,678	...	...	...	6,625	6,625	57,656	...	...	...	...	308	57,964	495,465	3,462	491,983
21	Shikárpur		24,375	...	...	...	...	...	...	...	28,162	52,537	...	...	...	3,031	3,031	8,910	...	...	...	...	29	8,939	750,487	125,952	624,535
22	Upper Sind Frontier		45,735	...	...	...	...	...	...	...	5,548	51,283	...	...	...	663	663	1,445	...	...	...	...	14	1,459	145,312	8,163	137,149
23	Thar and Párkar		Not available																											
	Total B		109,662	11	...	...	...	...	12,048	...	61,225	182,946	...	...	...	10,417	10,417	69,023	...	...	...	...	390	69,419	1,618,713	148,909	1,469,784
	Grand Total		509,799	435,912	84,838	355,686	447	325,720	122,547	16,488	262,100	2,013,527	3,986	37,535	448	13,942	55,911	2,216,622	17,233	53,488	..	..	762	2,287,405	26,100,905	676,378	25,424,532

IV.—Irrigation, 1885-86.

No.	District.	Net Area cropped.	Area irrigated from canals.	Area irrigated from other sources.	Total Area irrigated.	Cropping of Irrigated Area.								Deduct Area cropped with irrigation more than once.	Balance net irrigated Area.
						Wheat.	Rice.	Other Cereals and Pulses.	Sugarcane.	Other Food Crops.	Non-food Crops.	Fodder Crops.	Total.		
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
		Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.
	A.—Bombay Presidency Proper.														
	I.—Gujarát.														
1	Ahmadabad... (Rayatwári	678,275	4,179	51,042	55,214	14,351	19,996	12,552	2,046	4,612	2,277	....	55,774	560	55,214
	(Other Government	584,134	105	12,949	13,054	5,016	5,089	1,933	298	545	173	....	13,054	...	13,054
	(Alienated	53,959	340	4,632	4,972	1,518	2,341	903	178	102	30	...	4,972	...	4,972
	Total ...	1,316,368	4,617	68,623	73,240	20,885	27,266	15,388	2,522	5,259	2,480	...	73,800	560	73,240
2	Kaira ... (Rayatwári	542,141	5,763	38,251	34,014	5,071	13,636	5,943	890	3,449	8,404	....	37,383	3,370	34,014
	(Other Government	153,032	....	16,392	16,392	901	845	1,228	965	2,634	11,057	...	17,510	1,118	16,392
	(Alienated	....	....	...	....	...	....	....	...	....	...	...	....	...	...
	Total ...	695,173	5,763	44,643	50,406	5,972	14,481	7,171	1,755	6,083	19,441	.....	54,903	4,497	50,406
3	Panch Mahálś (Rayatwári	224,766	...	985	985	99	157	41	327	173	188	...	985	...	985
	(Other Government	12,771	....	24	24	....	...	....	23	1	..	...	24	...	24
	(Alienated	13,712	....	26	26	....	..	3	23	1	....	....	26	..	26
	Total ...	251,249	...	1,035	1,035	99	157	44	372	175	188	...	1,035	...	1,035
4	Broach ... (Rayatwári	554,313	....	1,633	1,633	11	709	37	107	607	202	....	1,673	40	1,633
	(Other Government	....	....	..	....	.	....	....	....	....	....	....	....	....	....
	(Alienated	....	....	....	....	....	..	....	....	....	....	....	....	....	....
	Total ...	554,313	...	1,633	1,633	11	709	37	107	607	202	.....	1,673	40	1,633
5	Surat ... (Rayatwári	476,594	....	12,081	12,081	88	3,419	115	6,583	1,567	456	...	12,189	107	12,081
	(Other Government	4,720	....	65	65	....	....	..	65	...	...	....	65	...	65
	(Alienated	3,739	....	22	22	....	..	..	14	8	...	....	22	....	22
	Total ...	484,033	...	12,168	12,168	88	3,419	115	6,602	1,595	456	.....	12,275	107	12,168
	II.—Deccan.														
6	Khándesh .. (Rayatwári	2,721,124	16,667	28,143	44,810	13,206	2,298	5,141	3 299	7,052	15,102	...	46,168	1,358	44,810
	(Other Government	62,943	....	55	55	26	..	1	1	9	13	...	55	...	55
	(Alienated	109,721	387	1,179	1,566	493	38	60	86	105	894	...	1,671	105	1,566
	Total ...	2,893,688	17,054	29,377	46,431	13,750	2,336	5,202	3,386	7,146	16,074	.....	47,894	1,463	46,431
7	Násik ... (Rayatwári	1,807,021	36,696	37,510	74,206	30,359	4,304	17,266	7,898	7,994	....	16,091	83,764	9,558	74,206
	(Other Government	....	....	...	....	..	..	....	....	...	....	....	....	...	....
	(Alienated	98,742	2,214	3,864	6,078	2,068	227	678	856	1,133	....	1,522	6,424	346	6,078
	Total ...	1,905,763	38,910	41,374	80,284	32,297	4,431	17,966	8,754	9,127	.....	17,613	90,188	9,904	80,284
8	Ahmanagar... (Rayatwári	2,591,712	3,388	83,412	86,800	28,946	526	50,157	3,197	9,276	7,014	203	99,221	12,421	86,800
	(Other Government	165,498	84	5,550	5,634	1,995	59	2,831	263	890	617	2	6,857	723	5,634
	(Alienated	146,416	....	3,997	3,997	1,053	52	2,515	54	483	299	2	4,458	461	3,997
	Total ...	2,593,656	3,472	92,959	96,431	31,894	639	55,203	3,514	10,649	7,930	207	110,036	13,605	96,431
9	Poona ... (Rayatwári	1,735,996	13,151	67,177	80,328	17,653	525	35,597	3,862	38,905	3,991	....	97,863	17,535	80,328
	(Other Government	...	....	...	...	...	....	....	....	....	....	....	....	....	...
	(Alienated	303,739	944	10,499	11,443	2,850	22	6,531	654	3,344	814	...	13,185	1,742	11,443
	Total ...	2,039,735	14,095	77,676	91,771	20,503	547	41,128	4,516	39,549	4,805	.....	1,11048	19,277	91,771

10	Sholápur ...	Rayatwári	1,951,826	3,051	72,233	75,284	30,844	1,744	35,066	2,946	14,801	10,092	1302	96,796	21,511	75,284
		Other Government	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Alienated	95,015	...	4,252	4,252	2,423	45	2,581	111	672	293	121	6,246	1,994	4,252
		Total	2,046,841	3,051	76,485	79,536	33,267	1,789	37,647	3,057	15,473	10,385	1,423	103,041	23,505	79,536
11	Sátára ...	Rayatwári	1,465,536	5,363	69,199	74,562	19,945	6,357	22,421	9,298	12,122	20,956	...	91,099	16,537	74,562
		Other Government	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Alienated	302,780	575	18,068	18,643	4,543	2,326	2,823	2,913	3,129	5,375	...	21,109	2,466	18,643
		Total	1,768,316	5,938	87,267	93,205	24,488	8,683	25,244	12,211	15,251	26,331	....	112,208	19,003	93,205
	III.—Bombay Karnátak.															
12	Belgaum ...	Rayatwári	1,380,987	11,738	29,481	41,217	2,101	18,896	5,263	6,133	5,198	5,351	...	42,942	1,725	41,217
		Other Government	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Alienated	311,667	1,390	7,101	8,491	762	562	2,175	2,157	1,567	1,824	...	9,047	556	8,491
		Total	1,692,654	13,126	36,582	49,708	2,863	19,458	7,438	8,290	6,765	7,175	....	51,989	2,281	49,708
13	Bijápur ...	Rayatwári	2,337,244	51	10,142	10,193	3,272	1,500	745	1,234	3,719	1,360	71	11,901	1,708	10,193
		Other Government	...	....	....	..	...	....	...	...	....	....	....	...	....	...
		Alienated	259,460	...	....	....	....	....	...	..	..	....	....	....	....	....
		Total	2,596,704	51	10,142	10,193	3,272	1,500	745	1,234	3,719	1,360	71	11,901	1,708	10,193
14	Dhárwár ...	Rayatwári	1,925,238	5,174	61,547	66,721	76	57,511	391	3,639	4,424	1,085	...	67,126	405	66,721
		Other Government	...	....	....	...	...	...	...	...	....	....	....	...	...	...
		Alienated	106,309	188	7,956	8,144	...	7,272	89	383	305	147	....	8,196	52	8,144
		Total	2,031,547	5,362	69,503	74,865	76	64,783	480	4,022	4,729	1,232	....	75,322	457	74,865
	IV.—Konkan.															
15	Thána ...	Rayatwári	508,732	....	4,780	4,780	....	...	...	1,537	3,243	...	....	4,780	...	4,780
		Other Government	740	...	...	....	...	...	.	....	....	...	....	...	....	....
		Alienated	7,503	....	....	....	....	....	....	....	...	....	....	....	....	....
		Total	516,975	....	4,780	4,780	....	....	....	1,537	3,243	....	....	4,780	...	4,780
16	Kolába ...	Rayatwári	175,660	No irrigation.												
		Other Government	182,669													
		Alienated	1,169													
		Total	359,498													
17	Ratnágiri ...	Rayatwári		Not available.												
		Other Government														
		Alienated														
		Total														
18	Kánara ...	Rayatwári	208,335	33,299	175,036	208,335	....	174,212	13,709	3,262	18,163	9,453	...	218,799	10,464	208,335
		Other Government	...	...	....	...	....	...	...	....	....	....	....	....	...	....
		Alienated	..	....	....	....	....	....	...	....	....	....	....	....	....	....
		Total	208,335	33,299	175,036	208,335	....	174,212	13,709	3,262	18,163	9,453	...	218,799	10,464	208,335
	Total A.	Rayatwári	20,974,490	1,38,511	732,652	871,163	165,912	305,632	204,466	56,198	132,605	85,991	17,667	968,471	97,308	871,163
		Other Government	1,166,337	189	35,035	35,224	7,928	5,993	5,693	1,515	4,079	11,845	2	37,086	1,841	35,224
		Alienated	1,813,921	6,038	61,596	67,634	15,615	12,785	17,358	7,428	10,849	9,676	1,645	75,356	7,722	67,634
		Total	23,954,748	1,44,738	829,283	974,021	189,465	324,410	227,517	65,141	147,533	107,512	19,314	1,080,892	106,871	974,021
	B.—Sind.															
19	Karáchi		216,117	170,428	42,913	213,341	36,367	94,666	64,220	450	2,428	26,450	...	224,581	11,240	213,341
20	Haidarabad		491,983	457,186	34,388	491,574	28,150	38,716	294,869	537	11,573	121,204	...	495,049	3,475	491,574
21	Shikárpur		624,535	480,522	144,013	624,535	148,304	279,841	239,340	706	16,448	65,849	...	750,488	125,953	624,535
22	Upper Sind Frontier		137,149	129,874	7,275	137,149	9,781	9,184	72,069	15	694	53,569	...	145,312	8,163	137,149
23	Thar and Párkar		Not available.													
	Total B ...		1,409,784	12,38,010	228,589	1,466,599	222,602	422,407	670,498	1,708	31,143	267,072	.....	1,615,430	148,831	1,466,599
	Grand Total ...		25,424,532	13,82,748	1,057,872	2,440,620	412,067	746,817	898,015	66,849	178,676	374,584	19,314	2,696,322	255,702	2,440,620

V.—Agricultural Stock, 1885-86.

No.	District.	Cattle and Other Quadrupeds.									Ploughs.		Carts.	
		Bullocks.	Cows.	Buffaloes.		Horses.	Mares.	Colts.	Asses.	Sheep and Goats.	With two Bullocks.	With four Bullocks.	Riding Carts.	Carts used in carrying loads.
				Females.	Males.									
	1	2	3	4	5	6	7	8	9	10	11	12	13	14
	A.—Bombay Presidency Proper.													
	I.—Gujarát.													
1	Ahmadabad ... Rayatwári	93,677	54,919	69,843	13,654	1,394	1,604	423	5,414	37,824	39,001	82	921	12,554
	Other Government	56,537	35,845	29,273	6,934	946	1,291	340	2,810	32,037	24,854	118	537	8,733
	Alienated	9,176	5,221	6,272	2,061	208	151	70	537	5,749	3,993	54	53	1,408
	Total ...	159,390	95,985	105,388	22,649	2,548	3,046	833	8,761	75,610	67,938	254	1,511	22,695
2	Kaira ... ... Rayatwári	118,611	46,625	111,103	3,636	490	892	307	3,834	32,606	48,891	....	618	18,961
	Other Government	39,133	7,556	58,860	2,794	244	316	100	1,632	13,946	13,755	....	598	9,182
	Alienated	....	....	....	....	....	....	....	....	....	....	....	....	....
	Total ...	157,744	54,181	169,963	6,430	734	1,208	407	5,466	46,552	62,646	.....	1,216	28,143
3	Panch Mahals ... Rayatwári	68,184	67,718	21,600	2,898	944	922	317	1,141	16,864	26,696	....	206	5,991
	Other Government	4,332	5,987	932	265	35	44	16	68	1,371	1,703	....	31	628
	Alienated	3,134	3,460	889	147	17	20	10	24	755	1,416	....	2	468
	Total ...	75,650	77,165	23,421	3,310	996	986	343	1,233	18,990	29,815	.....	239	7,087
4	Broach ... ... Rayatwári	67,731	13,524	42,722	6,610	881	1,027	494	1,074	28,557	28,746	....	2,873	16,794
	Other Government	....	....	....	....	....	....	....	....	....	....	....	....	....
	Alienated	....	....	....	....	....	....	....	....	....	....	....	....	....
	Total ...	67,731	13,524	42,722	6,610	881	1,027	494	1,074	28,557	28,746	.....	2,873	16,794
5	Surat ... ... Rayatwári	145,492	99,436	68,034	9,667	458	387	147	124	88,745	48,672	1,170	8,126	27,483
	Other Government	1,252	1,097	486	110	1	....	....	....	242	420	9	65	238
	Alienated	908	510	406	42	4	2	2	....	28	305	....	62	228
	Total ...	147,652	101,043	68,926	9,819	463	389	149	124	89,015	49,397	1,179	8,253	27,949
	II.—Deccan.													
6	Khándesh ... Rayatwári	350,567	250,996	117,655	16,291	7,385	6,084	3,214	8,102	174,697	85,448	17,644	28,268	51,899
	Other Government	14,807	13,593	2,237	420	163	136	48	67	2,113	5,621	63	157	1,722
	Alienated	20,935	13,467	5,585	726	411	369	170	644	8,115	4,827	1,382	1,250	2,453
	Total ..	386,109	278,056	125,477	17,437	7,959	6,589	3,432	8,813	184,925	95,896	19,089	29,675	56,074
7	Násik ... ... Rayatwári	202,370	189,771	33,583	25,101	5,554	4,356	2,195	3,199	216,918	43,313	22,370	13,278	14,207
	Other Government	....	....	....	....	....	....	....	....	....	....	....	....	....
	Alienated	12,477	7,304	1,719	1,391	307	244	103	267	11,570	2,277	1,743	885	914
	Total ...	214,847	197,075	35,302	26,492	5,861	4,600	2,298	3,466	228,488	45,590	24,113	14,163	15,121
8	Ahmadnagar ... Rayatwári	256,177	389,524	34,793	11,736	6,951	8,073	3,542	6,692	384,131	23,561	37,935	10,627	14,451
	Other Government	17,872	11,686	2,086	538	386	639	276	501	35,403	1,477	3,080	325	928
	Alienated	13,645	10,275	1,436	270	401	467	231	465	22,396	1,659	2,107	620	768
	Total ...	287,694	211,485	38,315	12,564	7,738	9,179	4,049	7,858	441,930	26,697	43,072	11,572	16,147
9	Poona ... ... Rayatwári	214,519	135,623	39,021	11,002	4,179	4,468	1,656	5,562	295,557	23,922	23,034	2,763	15,165
	Other Government	....	....	....	....	939	864	338	939	36,042	4,128	5,600	388	4,479
	Alienated	50,425	29,627	7,946	2,116									
	Total ...	264,944	165,250	46,967	13,118	5,118	5,332	1,994	6,501	331,599	28,050	28,634	3,151	19,644

STATISTICS

B.—RAINFALL.

STATISTICS

B.—RAINFALL.

Khándesh District Rainfall of 1885.

Rain Periods.	Dhulia.		Pimpalner (Pa'rnhied).		Cha'lisgaon.		Pa'chora.		Jalgaon.		Ja'mner (La'khol).		Bhusa'val (Varangaon).		Sa'vda (Ra'ver).	
	Fall.	Rainy days.	Fall.	Rainy days.	Fall.	Rainy days.	Fall.	Rainy days.	Fall.	Rainy days.	Fall.	Rainy days.	Fall.	Rainy days.	Fall.	Rainy days.
	Inches.		Inches.		Inches.		Inches.		Inches.		Inches.		Inches.		Inches.	
Early Rains	0·09	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...
(1st January to 10th April)																
Ante-Monsoon	0·58	2	0·40	2	...	...	0·27	1	...	...	0·27	1	...	...	...	...
11th April to 4th June .. Ashvini ..	0·18	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..
11th April to 4th June .. Bharni ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
11th April to 4th June .. Kritika ..	..	..	0·37	1	..	..	..	..	..	..	..	..	..	..	...	..
11th April to 4th June .. Rohini ..	0·35	1	0·03	1	..	..	0·27	1	..	..	0·27	1	..	..	..	..
Monsoon—Kharíf	4·91	22	10·59	39	11·20	19	8·97	18	10·41	32	27·16	18	8·70	16	12·58	28
5th June to 14th August . Mrig ..	0·43	3	0·84	6	1·61	5	1·55	2	1·69	5	0·64	4	1·00	3	2·36	4
5th June to 14th August . A'rdra ..	0·08	1	0·08	2	0·32	1	..	..	..	.	0·42	3	..	..	1·45	5
5th June to 14th August . Punarvasu ..	1·47	5	3·32	7	4·74	5	2·12	4	1·84	5	6·55	3	2·10	5	5·83	6
5th June to 14th August . Pushya ..	1·52	7	3·91	12	0·35	3	2·00	6	5·24	12	15·39	4	2·60	4	1·07	6
5th June to 14th August . A'shlesha ..	1 41	6	2·44	12	4·18	5	3·30	6	1·64	10	4·16	4	2·10	4	1·87	7
Monsoon—Rabi	14·42	21	7·75	27	8·69	17	10·98	14	9·34	22	10·38	15	8·60	12	6·44	14
15th August to 21st October .. Magha ..	3·36	6	3·40	13	0·41	3	1·24	4	4·32	8	5·95	4	3·10	6	1·47	4
15th August to 21st October .. Purva ..	0·68	3	0·20	4	1·20	3	0·20	1	0·40	3	1·26	3	..	..	0·40	1
15th August to 21st October .. Uttara ..	2 95	6	0·75	3	4·37	6	6·26	5	2·43	7	0·52	3	3·10	3	2·42	6
15th August to 21st October .. Hast ..	6 87	4	2·54	5	2·28	3	3·06	3	1·09	3	1·55	3	1 80	2	2·15	3
15th August to 21st October .. Chitra ..	0·56	2	0·86	2	0·43	2	0·22	1	0·20	1	1·10	2	0·00	1	..	.
Late Rains	1·38	3	1·00	2	0·79	3	1·75	2	3·48	4	1·25	2	0·35	1	2·17	6
22nd October to 30th November . Svátí ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	.
22nd October to 30th November . Vishákha ..	0·34	1	1·00	2	0·48	2	1·65	1	0·65	1	1 25	2	0·35	1	0·30	1
22nd October to 30th November . Anurádha ..	.	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
December	1·04	2	..	..	0·31	1	0·10	1	2·83	3	..	..	..	..	1·87	5
Total ...	21·33	49	19·74	70	20·68	39	21·97	35	23·23	58	39·06	36	17·65	29	21·19	48
Approximate average ...	23·16	...	25·41	...	24·59	...	28·99	...	30·72	...	29·35	...	26·11	...	23·41	...

General Characteristics.—In the north and west or the Dáng tracts of the Sátpudás and Sahyádris the fall is heavy and sure. The fall of the cotton and wheat tracts is uncertain.

Remarks.—Records available for 8 out of 16 tálukás, and these are, except Pimpalner, the chief cotton tracts. The extensive wheat tracts of the Tápti valley as well as the Dáng tracts, except Pimpalner, are unrepresented.

The monsoon rain was very late. Sowing was not possible till the middle of July. Cotton was most affected. The heavy rain, which then came, was followed by a prolonged break. The jowári crop was good, and bájri, though late, was very fair. Uttara rain (11th—24th September) was decidedly good, and Hast, the next rain period of 14 days, was also good, but strangely capricious and unevenly distributed. The rabi season was early and good, but would have been better without the December rain. As a whole the season (except for cotton) was fair in the east, south and centre—the rabi tracts. But the kharíf harvest of the west was poor. All over the district, scarcity of fodder till end of September was much felt. Such assistance as was possible was afforded by the opening of forests to grazing.

Násik District Rainfall of 1885.

Rain Periods.	Na'sik.		Igatpuri.		Sinnar.		Nipha'd.		Yeola.		Na'ndgaon.		Ma'legaon.		Kalvan (Otur).		Cha'ndor.		Dindori.		Peint.	
	Fall.	Rainy days.	Fall.	Rainy days.	Fall.	Rainy days.	Fall.	Rainy days.	Fall.	Rainy days.	Fall.	Rainy days.	Fall.	Rainy days.	Fall.	Rainy days.	Fall.	Rainy days.	Fall.	Rainy days.	Fall.	Rainy days.
	In.		In.		In.		In.		In.		In.		In.		In.		In.		In.		In.	
Early Rains ... ... (1st January to 10th April)	0·05	1	...	...	0·07	2	...	...	0·10	1	...	...	0·07	1	...	...	...	...	...	...	0·05	1
Ante-Monsoon	0·23	3	0·31	3	2·27	9	0·11	2	1·70	8	...	...	0·54	5	...	...	0·41	3	0·02	1	1·04	1
11th April to 6th June. Ashvini ...	0·07	1	...	...	0·24	3	0·01	1	0·09	3	...	...	0·05	1	...	...	...	...	...	...	...	...
11th April to 6th June. Bharni ..	..	...	...	...	0·03	1	...	...	0·02	1	...	...	0·03	1	...	...	...	...	...	...	...	...
11th April to 6th June. Kritika ..	..	...	...	...	1·04	1	...	...	0·11	1	...	...	0·35	1	...	...	0·20	1	...	...	...	...
11th April to 6th June. Rohini ...	0·16	2	0·31	3	0·36	4	0·10	1	1·48	3	...	...	0·11	2	...	...	0·21	2	0·02	1	1·04	1
Monsoon—Kharíf ...	12·15	46	73·05	67	7·29	37	5·32	26	2·05	18	7·12	24	4·68	18	9·22	34	9·96	25	10·60	39	60·94	60
5th June to 14th August. Mrig .	0·73	6	3·96	11	0·16	2	0·71	1	0·29	2	2·45	7	0·59	4	1·74	5	1·09	3	1·01	3	5·93	7
5th June to 14th August. A'rdra ..	0·55	9	5·20	14	0·15	4	0·13	2	...	..	0·26	2	...	...	0·19	3	0·10	1	0·28	6	4·51	13
5th June to 14th August. Punarvasu ..	6·06	5	23·05	14	2·84	6	1·38	4	0·29	4	1·32	4	0·87	6	2·46	7	1·74	3	4·37	6	26·52	12
5th June to 14th August. Pushya ...	2·47	13	24·86	14	1·73	13	1·54	8	1·08	7	1·04	4	0·70	4	1·76	9	2·31	9	3·36	12	15·06	14
5th June to 14th August. A'shlesha ...	1·45	13	15·98	14	2·41	12	1·56	11	0·39	5	1·55	7	2·52	4	3·07	10	4·72	9	1·58	12	8·92	14
Monsoon—Rabi ...	20·07	42	49·19	54	20·80	36	11·67	32	13·97	25	15·55	29	12·31	20	11·43	30	12·97	29	15·00	29	29·63	42
15th August to 21st October. Magha .	9·49	13	31·00	13	5·36	13	2·65	12	4·05	8	2·01	6	1·41	5	3·44	12	3·60	11	4·89	11	18·48	13
15th August to 21st October. Purva .	0·58	8	6·27	14	0·18	2	0·77	5	0·10	1	0·77	5	1·31	3	0·35	3	0·29	3	0·31	5	3·44	13
15th August to 21st October. Uttara .	4·28	9	5·61	13	10·14	13	5·17	8	6·76	9	8·45	9	2·70	4	4·36	6	3·65	7	3·74	6	2·19	6
15th August to 21st October. Hast ...	3·07	7	4·75	9	5·00	6	2·90	6	3·05	6	4·06	5	0·51	5	2·88	7	4·68	5	3·41	5	2·21	6
15th August to 21st October. Chitra ..	1·80	5	0·96	5	0·12	2	0·18	1	0·01	1	0·26	4	0·38	3	0·40	2	0·69	3	2·15	2	3·31	4
Late Rains	0·40	4	0·58	2	0·76	5	1·23	3	1·83	3	3·87	4	1·34	4	0·66	1	3·24	6	0·46	3	0·58	1
22nd October to 30th November. Svati .	...	..		...	.	...	...	..	..	...	...	...	...	...	...	...	.	...	.	...	...	...
22nd October to 30th November. Vishákha ...	0·40	4	0·58	2	0·67	4	1·02	2	0·36	1	2·00	3	1·07	3	0·66	1	3·07	5	0·46	3	0·58	1
22nd October to 30th November. Anurádha ..	..	..	...	...	..	...	...	...	...	...	...	...	.	...	..	...	..	...	...	...	...	...
December	...	...	...	..	0·09	1	0·21	1	1·47	2	1·87	1	0·27	1	...	...	0·17	1	...	...	...	...
Total ...	32·90	96	123·13	126	31·19	89	18·33	63	19·65	55	26·54	57	18·94	48	21·31	65	26·58	63	26·08	72	92·24	105
Approximate average...	27	...	114	...	21	...	18	...	22	...	21	...	23	...	32	...	28	...	26	...	93	...

General Characteristics.—The district is divisible into the Desh (or open country) and the Dángs (near the Sahyádris with heavy rainfall and primitive cultivation). The west portions of Násik, Dindori and Igatpuri and the whole of Peint belong to the Dángs.

Remarks.—No record available for Báglán táluka. Monsoon very late, though in the rice tracts there was some rain in June. The rain in Magha came very opportunely to enable the early sowings to be made. The Uttara and Hast rains gave a favourable rabi. The late rains were also favourable where the rabi fall was deficient. The scarcity of fodder, which lasted till October, was partly relieved by the issue of orders to allow free grazing on all waste land of which the right to graze is ordinarily sold by auction. On the whole the kharíf season was fair, though late. Cotton was sown in small area. The rabi harvest was good.

Ahmadnagar District Rainfall of 1885.

Rain Periods.	Nagar.		Sangamner.		Ja'mkhed.		Pa'rner.		Kopargaon.		Ra'huri.		Neva'sa.		Shevgaon.		Karjat.		Shrigonda.		Akola.	
	Fall.	Rainy days.	Fall.	Rainy days.	Fall.	Rainy days.	Fall.	Rainy days.	Fall.	Rainy days.	Fall.	Rainy days.	Fall.	Rainy days.	Fall.	Rainy days.	Fall.	Rainy days.	Fall.	Rainy days.	Fall.	Rainy days.
	In.		In.		In.		In.		In.		In.		In.		In.		In.		In.		In.	
Early Rains ... ... (1st January to 10th April)	0·31	2	...	...	...	...	0·48	1	...	...	0·10	1	0·10	1	0·11	2	...	...	...	...	...	..
Ante-Monsoon	1·17	9	3·05	10	1·37	6	0·72	4	0·59	2	0·65	1	1·80	4	1·78	8	2·10	8	0·95	7	0·53	3
11th April to 4th June. Ashvini ..	0·12	3	0·32	2	..	..	..	..	..	..	..	..	0·70	1	0·37	2	0·65	3	..	..	0·24	2
11th April to 4th June. Bharni ..	..	..	0·05	1	..	..	..	..	..	..	..	..	..	..	0·60	1	..	..	0·05	1	..	..
11th April to 4th June. Kritika ..	0·03	1	1·06	3	0·52	1	..	..	..	..	..	..	..	..	0·49	2	0·34	1	0·47	1	..	..
11th April to 4th June. Rohini ..	1·02	5	1·65	4	0·85	5	0·72	4	0·59	2	0·65	1	1·10	3	0·42	3	1·11	4	0·43	5	0·29	1
Monsoon—Kharif	4·78	25	3·70	23	7·84	25	4·09	14	2·12	9	4·37	12	5·65	27	11·20	21	3·78	16	2·87	15	5·05	24
5th June to 14th August. Mrig ..	0·85	7	0·74	5	2·00	6	0·62	3	0·15	2	1·79	4	1·96	7	1·06	5	0·67	3	0·49	4	0·44	1
5th June to 14th August. A'rdra ..	0·61	4	..	..	0·23	3	0·37	1	..	..	0·10	1	0·53	3	0·56	1	0·12	1	0·11	1	..	..
5th June to 14th August. Punarvasu ..	2·69	6	0·95	4	2·67	6	1·20	2	1·27	3	1·18	4	1·82	7	5·03	8	1·38	5	0·70	4	1·20	4
5th June to 14th August. Pushya ..	0·47	5	1·22	9	1·11	6	1·18	5	0·34	2	0·17	1	1·04	6	1·99	4	0·74	3	0·33	4	2·36	8
5th June to 14th August. A'shlesha ..	0·16	3	0·79	5	1·83	4	0·72	3	0·36	2	1·13	2	0·30	4	2·56	3	0·87	4	1·24	2	0·99	11
Monsoon—Rabi	12·79	30	14·70	31	18·54	28	12·32	27	15·01	20	16·84	24	12·32	24	14·72	26	15·86	26	21·61	29	17·03	31
15th August to 21st October. Magha ..	0·91	7	2·04	10	1·27	2	1·51	7	3·60	4	1·85	3	0·83	5	0·30	3	0·97	2	1·63	3	5·95	11
15th August to 21st October. Purva ..	..	..	..	..	2·45	4	0·03	1	0·72	2	0·53	2	0·35	2	0·49	1	..	..	0·13	1	0·12	3
15th August to 21st October. Uttara ..	7·63	9	0·17	11	6·67	12	6·62	11	7·41	8	7·35	9	6·39	11	6·79	12	6·39	11	14·12	11	8·61	10
15th August to 21st October. Hast ..	2·86	9	3·23	7	5·99	7	4·06	7	2·87	4	5·61	5	2·50	5	1·93	6	5·64	10	3·99	11	2·28	5
15th August to 21st October. Chitra ..	1·39	5	2·30	3	2·16	3	0·10	1	0·41	2	1·50	5	2·25	1	5·21	4	2·86	3	1·74	3	0·07	2
Late Rains	1·47	8	1·94	6	1·11	4	0·71	2	1·18	2	2·42	4	1·20	5	0·85	6	1·74	6	1·60	7	0·76	3
22nd October to 30th November. Svati ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
22nd October to 30th November. Vishakha ..	1·06	5	0·88	4	0·76	2	0·71	2	0·28	1	1·85	2	0·55	3	0·17	2	0·80	2	0·55	3	0·59	2
22nd October to 30th November. Anurádha ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
December	0·41	3	1·06	2	0·35	2	..	..	0·90	1	0·57	2	0·65	2	0·08	4	0·94	4	1·05	4	0·17	1
Total ...	20·52	74	23·39	70	28·80	63	18·32	48	18·90	33	24·38	42	21·07	61	28·66	63	23·48	56	27·03	58	23·37	61
Approximate average ...	23	..	17	...	26	...	21	...	18	...	26	...	21	...	23	..	20	...	20	...	21	...

General Characteristics.—*(1) Desh*—Godávari valley (tálukás 5 to 8). Rich alluvial plains, growing much wheat. Rainfall very uncertain. Bhima and Ghor valley (tálukás 9 and 10) alluvial, but less fertile. Rainfall more capricious. Good year exceptional. Tálukás 1 to 4 lie between those valleys. Alternation of bare hill and treeless plain, with occasional fertile well-wooded tracts. Rain more regular.

(2) Dángs.—Half Akola has very heavy rain. Half abuts on the Desh. The record shows the fall of the plain portion.

Remarks.—The ante-monsoon fall was useful for preparing the land. The kharíf rain came fairly early, but was not full till the middle of July, and sowings were not completed till August. Rabi rain was timely, but the sowings were delayed by its continuance. In Kopargaon, Párner and Shrígonda there was great scarcity of fodder till October. The area under kharíf was smaller than usual. Both kharíf and rabi were thus late, and the December rain therefore did good, and was not too heavy. On the whole the season was better than that of the previous year.

Poona District Rainfall of 1885.

Rain Periods.	Haveli.		Ma'val (Lona'vla).		Khed.		Junnar.		Sirur.		Purandhar.		Bhimthadi (Supa).		Inda'pur.	
	Fall.	Rainy days.	Fall.	Rainy days.	Fall.	Rainy days.	Fall.	Rainy days.	Fall.	Rainy days.	Fall.	Rainy days.	Fall.	Rainy days.	Fall.	Rainy days.
	Inches.		Inches.		Inches.		Inches.		Inches.		Inches.		Inches.		Inches.	
Early Rains ... ... (1st January to 10th April)	0·08	1	0·11	1	0·15	1	0·18	1	0·10	1	0·20	1	0·15	2	0·36	3
Ante-Monsoon	6·04	10	1·30	4	1·42	9	1·41	6	2·56	9	1·31	9	1·13	7	3·09	16
11th April to 4th June .. .. Ashvini	1·03	2	0·05	1	0·02	1	0·13	1	0·17	2	0·03	2	0·34	2	0·65	5
11th April to 4th June .. .. Bharni	..	..	0·42	1	..	..	0·10	1	..	..	0·09	2	..	..	0·05	1
11th April to 4th June .. .. Kritika	0·92	1	..	..	0·93	2	..	..	0·36	1	..	..	0·14	1	0·48	2
11th April to 4th June .. .. Rohini	4·09	7	0·83	2	0·47	6	1·12	4	2·03	6	1·19	5	0·65	4	1·91	8
Monsoon—Kharíf	9·82	49	105·48	69	0·72	54	12·97	47	2·82	23	5·06	35	3·44	15	1·90	16
5th June to 14th August.. .. Mrig	0·17	4	11·56	13	0·37	7	0·76	7	0·66	7	0·51	4	0·01	1	0·38	4
5th June to 14th August.. .. A'rdra	0·70	11	12·46	14	0·72	10	0·86	7	0·32	4	0·33	5	0·27	1	0·33	3
5th June to 14th August.. .. Punarvasu ..	3·71	10	34·38	14	1·73	10	4·92	8	1·24	6	1·82	6	2·11	3	0·57	3
5th June to 14th August.. .. Pushya ..	4·49	13	34·29	14	3·12	14	4·28	12	0·53	5	1·78	12	0·72	7	0·06	2
5th June to 14th August.. .. A'shlesha ..	0·75	11	12·79	14	0·58	13	2·15	13	0·07	1	0·62	8	0·33	3	0·56	4
Monsoon—Rabi	18·25	46	41·52	50	11·56	45	12·24	30	15·45	25	12·62	39	13·24	25	21·26	35
15th August to 21st October. Magha	2·95	13	26·27	13	4·15	13	5·32	12	1·31	5	1·22	11	0·62	2	0·47	4
15th August to 21st October. Purva	0·14	6	5·28	13	0·19	7	0·47	4	..	..	1·19	5	0·11	1	0·08	3
15th August to 21st October. Uttara	11·22	13	4·08	12	3·96	11	3·75	7	8·50	11	8·34	10	9·22	12	18·63	12
15th August to 21st October. Hast	2·16	11	5·01	9	2·86	11	2·49	5	3·80	7	1·21	11	3·24	9	4·61	13
15th August to 21st October. Chitra	1·78	3	0·85	3	0·40	3	0·21	2	1·84	2	0·66	2	0·05	1	2·47	3
Late Rains	3·34	10	1·35	4	1·80	6	2·81	4	1·70	6	1·73	10	0·41	2	1·54	6
22nd October to 30th November Svâti	0·09	2	..	..	..	..	..	..	..	..	0·15	2	..	..	0·22	1
22nd October to 30th November Vishâkha ..	1·96	6	1·35	4	1·18	4	2·35	2	1·25	4	0·46	6	0·41	2	..	..
22nd October to 30th November Anurâdha ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
December	1·30	2	..	..	0·68	2	0·46	2	0·45	2	1·12	2	..	..	1·32	5
Total ...	37·53	116	149·76	128	21·71	115	29 61	88	22·63	64	20·92	94	18·37	51	28·15	76
Approximate average ...	28	...	...	...	23	...	22	...	18	...	21	...	16	...	17	...

General Characteristics.—The district varies from a heavy certain rainfall to a most scant capricious one. Sure rain is enjoyed by the west portions of Junnar, Khed, Havoli and all of Mával. A moderate but regular rainfall characterizes the central belt, while the Bhimthadi and Indápur tálukás are uncertain and irregular like the adjoining tálukás of Sholápur.

Remarks.—The monsoon was scant at the commencement, though timely. Sowing was delayed from insufficiency of moisture, and considerable anxiety was felt till the good fall of the middle of July (Punarvasu). This induced full kharíf sowings, except in the eastern rabi tracts. The Magha rain, though favourable elsewhere, was still deficient in the east, and anxiety there was not relieved till the full general fall of Uttara. On the whole, though want of fodder was felt in the east, the season, early and late, was good.

Sholápur District Rainfall of 1885.

Rain Periods.		Shola'pur.		Ba'rsi.		Ma'dha.		Karma'la.		Pandharpur.		Sa'ngola.		Ma'lshiras.	
		Fall.	Rainy days.	Fall.	Rainy days.	Fall.	Rainy days.	Fall.	Rainy days.	Fall.	Rainy days.	Fall.	Rainy days.	Fall.	Rainy years.
		Inches.		Inches.		Inches.		Inches.		Inches.		Inches.		Inches.	
Early Rains		0·69	3	0·47	4	0·11	1	0·56	3	0·09	1	0·07	1	0·15	1
(1st January to 10th April)															
Ante-Monsoon		1·33	10	2·38	11	1·38	9	2·90	13	4·23	15	2·76	8	1·85	3
11th April to 4th June ..	Ashvini ..	0·28	5	0·20	3	0·18	3	0·26	2	0·57	3	0·28	2	0·25	1
	Bharni ..	..	..	0·15	1	..	..	0·50	1	0·59	1	..	..	..	..
	Kritika ..	..	..	1·02	2	0·15	1	0·47	2	1·34	3	0·70	2	..	..
	Rohini ..	1·05	5	1·01	5	1·05	5	1·67	8	1·73	8	1·78	4	1·60	2
Monsoon—Kharíf		6·77	28	7·92	43	4·00	21	3·63	27	3·57	19	2·79	10	1·57	5
5th June to 14th August ..	Mrig	0·75	7	1·85	8	1·51	5	0·84	6	1 72	6	0·22	2	0·49	2
	A'rdra.. ..	0·46	3	0·18	3	0·55	3	0·80	2	0·24	2	..	..	0·22	1
	Punarvasu ..	3·21	7	4·12	11	1 29	6	1·04	6	1·46	8	2·22	6	0·69	1
	Pushya ..	1·01	5	0·69	11	0·35	3	0·58	9	..	..	0·35	2	..	..
	A'shlesha ..	1·34	6	1·08	10	0·30	4	0·37	4	0·15	3	..	..	0·17	1
Monsoon—Rabi...		19·66	33	17·93	39	23·64	36	19·40	37	26·31	28	21·05	27	19·34	24
15th August to 21st October ..	Magha ..	0·06	3	0·88	7	0·61	4	2·34	6	0·02	1	0·20	1	..	..
	Purva.. ..	0·40	3	0·65	3	0·72	4	0·11	2	0·63	1	..	..	0·35	1
	Uttara ..	9·83	12	10·89	13	13·37	12	10·15	14	15·36	13	10·65	12	14·66	11
	Hast	7·35	12	4·81	13	8·67	13	6·17	12	9·56	11	10·02	12	3·65	11
	Chitra.. ..	2 02	3	0·70	3	0·27	3	0·63	3	0·74	2	0·18	2	0·68	1
Late Rains		2·24	10	4·39	9	2·65	9	4·48	10	2·54	8	3·43	7	2·19	7
22nd October to 30th November .	Svâti	..	..	0·01	1	0·23	3	0·10	1	1·09	2	1·06	3	0·48	1
	Vishákha ..	0·26	3	1·72	4	0·25	2	2·44	5	0·22	2	1·80	2	0·26	2
	Anurádha ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
December		1·98	7	2·66	4	2·17	4	1·94	4	1·23	4	0·57	2	1·45	4
Total ...		30·69	84	33·09	106	31·78	76	30·97	90	36·74	71	30·10	53	25·10	40
Approximate average ...		31	...	29	...	26	...	24	...	28	...	22	...	20	...

General Characteristics.—The isolated táluka of Bársi is richest, and has the surest rain; but the rainfall is scanty all over the district, and very capricious.

Remarks.—The preparatory showers before the regular monsoon were unusually favourable; but the early sowing rains, though timely, were altogether scant. Sowings were delayed till the middle of July. But the good rain which then fell was not followed up by sufficient showers till the middle of August. The kharíf crops were withering, and fodder was very scarce, when the Uttara rain came full and general. The succeeding rabi rains were also good, and the area of rabi was not only full, but partially made up for the deficiency of kharíf, which was hardly half sown. Though rabi sowings were late, the help given by November and December rain was sufficient to give an unusually fine harvest.

Sátára District Rainfall of 1885.

Rain Periods.	Sa'ta'ra.		Koregaon (Reva'ri).		Wa'i. (Bhatgar).		Ja'vli (Kas).		Pa'tan (A'varda).		Kara'd.		Ma'n (Mhasvad).		Khata'v (Maini).		Kha'na'pur (Chikhli).	
	Fall.	Rainy days.	Fall.	Rainy days.	Fall.	Rainy days.	Fall.	Rainy days.	Fall.	Rainy days.	Fall.	Rainy days.	Fall.	Rainy days.	Fall.	Rainy days.	Fall.	Rainy days.
	Inches.		Inches.		Inches.		Inches.		Inches.		Inches.		Inches		Inches.		Inches.	
Early Rains	0·05	1	0·22	2	...	...	0·23	1	1·86	2	0·46	1	...	...	...	...	0·26	1
(1st January to 10th April)																		
Ante-Monsoon	5·80	12	6·35	10	4·48	10	6·05	19	8·55	14	6·76	11	3·53	10	1·80	11	4·92	11
11th April to 4th June — Ashvini ..	0·42	3	0·43	2	0·39	2	0·45	5	1·02	4	0·15	1	0·43	3	0·66	6	0·74	2
11th April to 4th June — Bharni ..	0·18	1	..	..	0·12	1	0·39	1	0·28	1	0·05	1	..	..	..	..	0·30	1
11th April to 4th June — Kritika ..	..	..	0·06	1	..	..	0·62	2	1·80	2	0·26	1	1·15	2	0·39	2	..	..
11th April to 4th June — Rohini ..	5·20	8	5·84	7	3·97	7	4·59	11	5·45	7	6·30	8	1·95	5	0·75	3	3·88	8
Monsoon—Kharif	22·84	58	10·75	36	21·10	65	92·37	71	28·41	47	12·31	40	3·37	13	3·87	24	6·25	31
5th June to 14th August — Mrig ..	1·78	9	0·59	2	0·90	13	5·50	15	1·99	7	1·31	7	0·50	2	0·24	3	0·56	4
5th June to 14th August — A'rdra ..	1·84	11	0·79	7	2·08	12	19·10	14	3·70	9	0·40	3	1·00	1	0·02	1	0·18	3
5th June to 14th August — Punarvasu ..	5·96	10	3·57	6	7·60	13	25·29	14	8·86	9	3·67	6	1·18	4	1·88	7	1·71	5
5th June to 14th August — Pushya ..	9·97	14	4·71	13	6·84	14	34·30	14	11·51	14	5·52	14	0·37	4	1·11	9	2·41	12
5th June to 14th August — A'shlesha ..	3·29	14	1·09	8	3·68	13	14·12	14	2·25	8	1·41	10	0·32	2	0·62	4	1·39	7
Monsoon—Rabi...	16·56	41	21·72	30	13·58	46	47·28	57	13·89	35	11·89	35	15·29	30	16·76	32	9·18	24
15th August to 21st October — Magha ..	5·04	13	3·20	9	3·54	11	29·39	13	5·85	12	3·05	10	0·11	3	0·62	6	1·25	7
15th August to 21st October — Purva ..	0·66	7	0·21	2	0·29	9	4·71	13	0·47	6	0·28	4	0·54	3	0·04	2	0·04	1
15th August to 21st October — Uttara ..	4·35	9	10·61	9	0·40	13	4·36	13	3·12	6	2·02	10	7·32	13	11·51	13	3·05	9
15th August to 21st October — Hast ..	5·86	10	7·46	9	3·24	11	7·06	13	4·04	9	5·39	9	6·62	10	3·49	10	2·72	5
15th August to 21st October — Chitra ..	0·05	2	0·24	1	0·11	2	0·86	5	0·41	2	1·15	2	0·70	1	1·10	1	2·12	2
Late Rains	2·05	8	2·52	5	0·94	5	2·78	13	2·62	7	2·46	9	2·63	9	1·02	6	2·01	5
22nd October to 30th November — Svati ..	0·56	3	0·30	1	0·11	2	1·30	3	0·85	2	1·00	3	0·01	3	0·28	1	0·79	2
22nd October to 30th November — Vishakha ..	1·29	3	2·14	3	0·32	1	1·20	6	1·73	3	1·21	5	0·64	2	0·08	1	1·02	2
22nd October to 30th November — Anurádha ..	..	..	..	..	..	..	..	..	..	.	..	..	..	..	..	..	..	..
December	0·20	2	0·08	1	0·51	2	0·28	4	0·04	2	0·45	1	1·38	4	0·66	4	0·20	1
Total ...	47·30	120	41·56	83	40·10	126	148·71	161	55·33	105	33·88	96	24·82	62	23·45	73	22·62	72
Approximate average ...	40	...	27	..	38	...	72	...	65	...	27	...	21	...	21	...	24	...

General Characteristics.—Western Belt—Parts of Jávli, Pátan, Wái, Sátára and Válva, hilly. Regular and heavy rainfall. Central Belt—East portions of above and all Koregaon and Karád. Rich, well-watered valleys. Eastern Belt—The rest chiefly a waving plain and of poor land. Uncertain rainfall. But south portion of Tásgaon rich, well-wooded plains.

Remarks.—No record available for Válva and Tásgaon tálukás.

Preparatory rains very abundant, giving ample moisture for rice and similar crops on the west. The kharíf fall was light, and general sowings much delayed. Full relief came at the middle of July, and the area of kharif was full. The rabi rain till Uttara was insufficient, and the standing kharíf of the rabi tracts was hardly kept alive. Hast rain was very good and seasonable, removing the fodder scarcity on the east, which had necessitated importation from more favoured tracts. The kharíf harvest was below average. The rabi above. Gram and wheat were especially good.

Belgaum District Rainfall of 1885.

Rain Periods.	Belgaum.		Sampgaon (Nesargi).		Parasgad (Gurla'hasur).		Gokak (Dhupda'l).		Chikodi (Gotur).	
	Fall.	Rainy days.	Fall.	Rainy days.	Fall.	Rainy days.	Fall.	Rainy days.	Fall.	Rainy days.
	Inches.		Inches.		Inches.		Inches.		Inches.	
Early Rains	0·91	4	0·35	1	0·98	5	0·38	5	...	...
(1st January to 10th April)										
Ante-Monsoon	3·82	13	7·13	7	3·50	10	4·73	10	5·96	7
11th April to 4th June... Ashvini ...	1·01	3	0·34	2	0·01	1	0·15	1	...	...
11th April to 4th June... Bharni ...	0·41	1	6·10	2	0·13	1	1·10	3	0·05	1
11th April to 4th June... Kritika ...	..	...	0·55	2	0·12	2	...	...	...	...
11th April to 4th June... Rohini ...	2·40	9	0·14	1	3·24	6	3·48	6	5·91	6
Monsoon—Kharíf	22·35	64	13·27	27	5·59	26	8·13	28	7·70	18
5th June to 14th August... Mrig ...	1·81	13	1·24	2	1·72	3	4·29	2	2·50	3
5th June to 14th August... A'rdra ...	1·57	11	0·51	3	0·26	2	0·28	3	0·97	4
5th June to 14th August... Punarvasu ...	2·98	13	0·60	4	1·12	6	1·18	8	0·95	6
5th June to 14th August... Pushya ...	9·42	14	4·33	12	0·77	10	1·10	10	2·22	4
5th June to 14th August... A'shlesha ..	6·57	13	6·59	6	1·72	5	1·28	5	1·06	1
Monsoon—Rabi	17·46	44	31·67	27	10·41	39	10·24	24	13·39	12
15th August to 21st October... Magha ...	5·02	13	9·23	8	0·77	11	0·59	7	3·09	4
15th August to 21st October... Purva ...	0 33	7	...	...	0·14	5	...	...	...	...
15th August to 21st October... Uttara ...	2·85	7	2·55	7	4·84	9	3·14	7	1·96	2
15th August to 21st October... Hast ...	6·43	13	15·39	9	2·32	10	4·30	8	7·25	4
15th August to 21st October... Chitra ...	2·83	4	4·50	3	2·34	4	2·21	2	1·09	2
Late Rains	5·05	11	3·68	7	1·65	12	3·93	10	3·25	4
22nd October to 30th November... Svati ...	3·16	4	2·17	3	0·91	3	1·22	4	1·13	2
22nd October to 30th November... Vishákha ...	1·84	5	0·51	2	0·49	5	2·34	3	2·12	2
22nd October to 30th November... Anurádha ...	...	...	...	...	...	...	...	...	..	..
December...	0·05	2	1·00	2	0·25	4	0·37	3	..	...
Total ...	49·59	136	56·10	69	22·13	92	27·41	77	30·30	41
Approximate average ...	47	...	23	...	20	...	17	...	21	...

General Characteristics.—Near the Sahyádris the rain of the south-west monsoon is very constant and heavy (Belgaum and Khánápur). Further east, Chikodi, Gokák and Sampgaon, it is fitful. The eastern tálukás show a fitful fall, but this is supplemented by a scanty supply from the north-east monsoon (which comes generally in October and later).

Remarks.—No return available from the Khánápur and Athni tálukás.

The ante-monsoon showers—again good—are especially valued in parts of this district (west and south) for rice sowing. The monsoon broke in time and favourably, but a long break till the end of July was detrimental. It was relieved then, except in the north-east. The rabi rains were good, except in the east and north. Here the prospects became so bad that the cattle were driven to the Ghats. All anxiety was removed by the heavy Uttara fall. The rabi area was large, and prospects very good till damped by excessive late rains, bringing blight and rust. The total fall of the year was above average, but it was not seasonable, and the year was not a favourable one.

Bijápur District Rainfall of 1885.

Rain Periods.	Bijápur.		Indi.		Sindgi.		Bágevádi.		Muddebihál.		Bágalkot.		Bádámi.		Hungund.	
	Fall.	Rainy days.	Fall.	Rainy days.	Fall.	Rainy days.	Fall.	Rainy days.	Fall.	Rainy days.	Fall.	Rainy days.	Fall.	Rainy days.	Fall.	Rainy days.
	Inches		Inches		Inches		Inches		Inches		Inches		Inches		Inches	
Early Rains	0·17	5	0·33	4	...	...	0·28	1	0·64	4	0·35	3	...	...	0·15	1
(1st January to 10th April)																
Ante-Monsoon	4·99	11	1·86	9	3·17	12	2·70	8	2·55	8	3·32	10	1·81	5	4·77	11
11th April to 4th June — Ashvini ...	1·77	3	0·43	2	1·31	4	0·80	2	...	...	0·18	2	...	...	1·52	3
11th April to 4th June — Bharni ...	0·23	1	...	...	0·39	2	0·16	2	0·34	2	1·80	2	0·25	1	1·27	2
11th April to 4th June — Kritika ...	1·40	1	0·11	1	0·64	3	1·10	1	0·65	2	0·77	3	0·07	1	0·54	1
11th April to 4th June — Rohini ..	1·59	6	1·32	6	0·83	3	0·64	3	1·56	4	0·57	3	1·49	3	1·44	5
Monsoon—Kharíf	4·81	27	6·95	25	8·45	26	2·97	18	2·82	25	4·09	23	5·34	11	4·28	23
5th June to 14th August — Mrig ...	0·59	4	0·57	6	0·58	3	0·37	5	0·39	5	0·49	4	0·81	2	1·66	5
5th June to 14th August — Árdra ...	0·02	2	2·29	5	3·34	5	..	...	...	...	1·10	2	...	...	...	...
5th June to 14th August — Punarvasu ...	3·19	10	2·54	7	3·41	9	2·27	6	1·92	11	1·33	10	3·38	5	1·18	7
5th June to 14th August — Pushya ...	0·67	8	0·36	2	0·52	6	0·13	5	0·22	7	0·52	4	0·38	2	0·45	6
5th June to 14th August — Áshlesha ...	0·34	3	1·19	5	0·60	3	0·20	2	0·29	2	0·65	3	0·77	2	0·99	5
Monsoon—Rabi	15·62	35	13·51	27	17·38	28	17·01	29	16·63	30	10·00	31	12·00	18	11·60	27
15th August to 21st October — Magha ...	0·07	2	...	...	0·05	1	0·04	2	0·10	3	0·26	4	...	...	0·21	2
15th August to 21st October — Purva ...	0·12	3	0·24	1	0·15	1	...	...	0·01	1	0·10	1	0·40	2	0·13	1
15th August to 21st October — Uttara ...	6·36	12	5·82	11	6·28	12	9·52	13	9·49	12	4·60	11	6·06	6	5·02	11
15th August to 21st October — Hast ...	7·78	12	7·01	12	8·85	10	6·87	11	6·86	12	4·21	12	5·19	9	5·94	11
15th August to 21st October — Chitra ...	1·29	6	0·44	3	2·05	4	0·58	3	0·17	2	0·83	3	0·35	1	0·30	2
Late Rains	4·59	9	5·19	9	3·81	9	8·81	14	3·14	8	6·88	11	4·61	7	3·18	8
22nd October to 30th November — Sváti ...	1·45	4	1·41	3	1·36	2	3·27	3	1·56	3	3·20	2	0·35	1	1·07	2
22nd October to 30th November — Vishákha ...	1·70	3	0·41	3	1·18	3	2·10	5	1·12	3	1·64	5	1·61	4	1·76	3
22nd October to 30th November — Anurádha ...	...	...	..	...	...	...	...	...	...	...	...	...	...	...	...	...
December	1·44	2	3·37	3	1·27	4	3·44	6	0·46	2	2·04	4	2·65	2	0·35	3
Total ..	30·18	87	27·84	74	32·81	75	31·77	70	25·78	75	24·64	78	23·76	41	23·98	70
Approximate average ...	23·88	...	27·36	...	26·34	...	22·39	...	23·30	...	22·39	...	24·27	...	23·37	...

General Characteristics.—This district receives its rain from both the south-west and the north-east monsoon. Hungund enjoys an even and generally sure rainfall. Bágalkot and Bádámi fare well as a rule. The rich plains of the Krishna and Don valleys are uncertain. The north tálukás of Bijápur, Indi and Sindgi have capricious and light rainfall.

Remarks.—Ante-monsoon showers, which are only valuable to allow of early ploughing, were very favourable. But the kharíf rains were scanty. Sowings were delayed till the end of July. The rainfall was very unseasonable and deficient till the middle of September. A total failure of the kharíf harvest appeared imminent. The Uttara and Hast rains saved the kharíf and gave a good rabi. The kharíf harvest was about 4 annas, taking 12 annas as average. The rabi was a bumper crop north of Bijápur and up to average everywhere. The season as a whole was greatly better than that of the previous year.

Dhárwár District Rainfall of 1885.

Rain Periods.	Kod (Masur).		Ránebennur (Medleri).		Gadag (Dambal).	
	Fall.	Rainy days.	Fall.	Rainy days.	Fall.	Rainy days.
	Inches.		Inches.		Inches.	
Early Rains (1st January to 10th April)	0·10	1	0·31	2	0·11	1
Ante-Monsoon	7·78	8	3·53	5	5·50	11
11th April to 4th June. Ashvini	...	..	...	...	0·65	1
11th April to 4th June. Bharni	2·80	4	0·81	1	3·04	4
11th April to 4th June. Kritika	...	...	1·82	2	0·73	2
11th April to 4th June. Rohini	4·98	4	0·90	2	1·08	4
Monsoon—Kharíf	8·87	33	3·67	14	3·84	8
5th June to 14th August. Mrig	1·76	6	1·20	1	0·10	1
5th June to 14th August. A'rdra	0·71	2	..	...	0·15	1
5th June to 14th August. Punarvasu	1·98	9	0·34	3	2·89	3
5th June to 14th August. Pushya	1·86	10	1·38	6	0·02	1
5th June to 14th August. A'shlesha	2·56	6	0·75	4	0·68	2
Monsoon—Rabi	9·18	19	13·47	14	13·41	17
15th August to 21st October. Magha	0·49	3	0·19	3	0·21	1
15th August to 21st October. Purva	0·39	1	...	...	0·21	1
15th August to 21st October. Uttara	0·50	2	...	...	7·03	8
15th August to 21st October. Hast	6·41	11	10·74	8	5·13	6
15th August to 21st October. Chitra	1·39	2	2·54	3	0·83	1
Late Rains	2·94	10	5·91	11	1·77	5
22nd October to 30th November. Sváti	0·70	2	4·55	3	0·45	2
22nd October to 30th November. Vishákha	1·31	3	0·40	3	0·03	1
22nd October to 30th November. Anurádha	...	...	...	...	..	..
December	0·93	5	0·96	5	1·29	2
Total	28·87	71	26·89	46	24·63	42
Approximate average	26	...	22	...	25	...

General Characteristics.—The district is composed of hilly tracts—the malád growing rice and hill grains (Hángal, Kalghatgi and Kod) and the black-soil plains growing cotton and wheat (Gadag, Ron, Navalgund and Hubli), or cotton but no wheat (Karajgi and Ránebennur). The Dhárwár and Bankápur tálukás are partly malád.

The soil of the malád is red and gravelly, but the rainfall is steady and comparatively heavy. It is more sure and seasonable the further to the west. The proverb says: "Good rain won't give a big crop, nor will bad rain bring famine."

This is in comparison to the fertile black-soil plains, where with good seasonable rains the produce is very large, but where the fall is irregular and uncertain, and where there is always risk of drought.

Remarks.—Return from only 3 tálukás out of 11 available.

The ante-monsoon showers in this district are more needed even than in Belgaum. They give opportunity to prepare the kharíf lands and to sow rice and also to relieve the chronic water scarcity of the black-soil plain. They were full. The kharíf fall was scant throughout. Early jowári sowings were retarded, and rice was greatly in need of rain. Good rain, except in the black-soil tracts, came in August. Here the kharíf area was very small. The Uttara rain was very beneficial in the black soil, but was deficient in the malád. The continuous fall of Uttara, Hast and Chitra made rabi sowings late, but the crops were vigorous and yielded well. The rice crop was considerably below average. Jowári and bájri hardly up to average, but the rabi was all good.

APPENDICES.

APPENDICES.

A.

(Itinerary referred to in para. 1 of the Report.)

November.—Was present at the reaping of the experimental ráb plots at Karjat (2nd), Igatpuri (4th) and Lonávla (20th). With the Forest Commission at Thána and Karjat, 2nd to 8th. Visited Bhadgaon Farm 21st to 23rd.

December.—On 4th visited the Alegaon Commissariat Farm. On 7th met Mr. T. Wardle arrived from England to collect specimens of silk for the Indian and Colonial Exhibition. From 11th to 19th with the Forest Commission at Kolhár (Thána).

January.—Two visits to Karjat to plan new ráb experiments, and then on 13th started for Bijápur and Dhárwár to make final arrangements for the transfer of the Bijápur records. Tour in Bijápur District visiting parts of the Bijápur, Bágevádi, Bágalkot, Sindgi and Indi tálukás; visiting the town of Kaládgi to form an opinion on Mr. Crawford's scheme of utilizing the old Government buildings there as an Agricultural Farm and Training College.

February.—Returned to Head-quarters on the 10th. On 15th left for Hánsot in Gujarát to conduct trials with Steam Thresher. Thence on 24th visited Mr. Bomanji A. Dalál's Farm at Rustumpura in the Panch Maháls. On the 28th reached Wadhwán for the Agricultural Show.

March.—Returned to Poona on the 6th. On 23rd left for Bassein to join the Forest Commission.

April.—On the departure of the Commission to Alibág remained till the 25th, conducting special enquiries on behalf of the Commission in the Bassein, Máhim and Dáhánu tálukás of Thána, and the Balsár and Párdi tálukás of Surat. Prepared a memorandum on the "Garden Cultivation of the Bassein and Máhim Tálukás." On 26th went to the Bhadgaon Farm to make further trials with the Steam Wheat Threshing Machine. Returned to Head-quarters on the 28th.

May.—On the 3rd moved to Khandála to be present at the Forest Commission sittings at Lonávla, and to make visits to Karjat for ráb experiments.

June.—Spent a week from the 19th at the Bhadgaon Farm.

July.—Thence visited Karjat for the ráb experiments.

August.—On 11th to 13th visited the experimental farm at Nadiád in Gujarát. On return was present at the first meeting of the Managing Committee of the Bombay Veterinary College.

September.—Spent a week in Dhárwár from the 6th.

October.—Was at the Bhadgaon Farm (20th to 24th). At Karjat on the 25th and 26th to supervise the cutting of rice in the ráb plots.

B.

(Referred to in para. 54 of the Report).

112, Savage Gardens, London, E.C.
September 23, 1886.

E. C. OZANNE, Esquire,
Director of Agriculture,
Poona.

Dear Sir,

We received your favour of the 16th August, and beg to tender our thanks for the care devoted to experiments on the seeds we sent you.

We have examined the samples as grown from them and beg to say :—

White Beans.—They make a very good sample, and seem to retain the exact characteristics of the original seed. These beans would be a good marketable article in England as well as on the continent of Europe and in America, and as it is a crop not yet much overdone, and therefore ranging in value *far above* wheat and other breadstuff, we consider its cultivation would make a profitable addition to Indian agriculture; at the same time it may be well to mention that these beans are not grown in England at all, as they do not take kindly to a northern latitude, so that the import from India would not supersede any branch of the native agriculture in England.

Acting on your suggestion, we are going to send, say, ½ ton seed out; old beans are no more obtainable, and the new ones will come to market in about a month, when we will forward the above quantity; we leave it to you to distribute them either gratis or for some small payment, if you think the latter would tend to make farmers more careful of the seed. Just to give you an idea of value, we wish to say, these beans sell here at about 10s per cwt. We should fancy that for a start this quantity might be sufficient; still, if you find more interest evinced and perhaps larger farmers wish to go in for them, we will be glad to send out any quantity required simply to sell them at cost price.

Peas.—The sample you sent us shows that the pea itself will grow there very well, and, what is also a great point, it remains free from the European insect, which in Europe do such a great deal of harm to the crops. However, there is *one* point that would detract from the value of this particular variety in the eyes of the European buyer, *viz.*, its faded colour. This particular pea is specially liked here when deep green, and in such a condition would fetch a very high price; still even as it is it would realise close on 40s per quarter (504 lbs.). We would suggest, if your farmers are desirous to cultivate peas of that kind, to go in for the large *white* Victoria Pea, or the so-called Blackeyed Victoria, a variety which is a native of Canada. Of both these varieties we send you post samples.

Mustard Seed.—The seed was of English growth, and we must conclude that the change of climate was too striking to admit of immediate acclimatization. The same plant is cultivated in California, and we intend at a future opportunity to send you a sample of such, which, we trust, will have a better result.

About *Long Millet* (or *Canary Seed*) it may interest you to know that trials through the agency of the Cawnpore Department of Agriculture and Commerce have been most successful. The said Department sent us a copious sample of the seed, which in point of quality could not be exceeded by European seed.

The Gram we sent you is similar to Cabul gram in colour and general appearance, but the size of the grain is quite six times as large as the Cabul; we should judge that, irrespective of the superior properties of so large a pea, the yield on the same acreage must be by far in favour of the same.

Lentils.—We think we made a mistake sending out European lentils. We will send you the same variety, but of Chilian growth, for renewed trial if you care to do so.

Finally, we beg to draw your attention to the cultivation of *barley* of a quality superior to the native grain. Such barley as we send you a sample of, which is of Californian extraction, commands here as well as all over Europe an exceptionally high price; and as we know, from recent experience in our Import Department, that fine barley, only differing in shape from the sample we send you, can be grown in India, we think it will be well worth any of your farmers' while to try this superior quality. We will also try to send you a sample of Chili barley, which is very similar and commands a similar value. Both these varieties are originally taken from European seed. We could also send you samples of direct European growth, but it seems that plants that have already modified their habits by vegetation in a hot climate are best suited for your country.

We are, &c.,
(Signed) PRASCHKAUER & Co.

Exports of Indian Wheat from the Port of Bombay to all Ports beyond the Presidency from 1880 to 1886, (referred to in para. 70 of the Report).

Months.	Years.						
	1880.	1881.	1882.	1883.	1884.	1885.	1886.
	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.
January	2,927	21,768	85,674	31,019	15,285	41,846	31,424
February	1,626	19,275	40,239	25,403	15,933	32,366	24,484
March	3,407	20,000	30,557	29,516	14,997	45,824	28,402
April	4,985	32,481	30,390	37,503	15,230	38,933	71,581
May	17,110	42,428	67,886	76,205	44,831	56,871	124,232
June	19,407	52,236	37,190	82,881	54,894	66,602	56,341
July	15,055	47,369	19,386	55,921	65,437	33,379	38,715
August	7,832	28,172	5,396	32,425	45,546	38,004	52,896
September...	4,193	35,132	13,797	36,265	30,974	48,975	.....
October	6,527	48,835	22,317	18,466	19,045	52,808	.....
November...	8,652	76,714	34,159	29,319	28,038	59,598	.....
December	22,991	48,559	32,703	34,508	27,806	53,977	.....
Total ...	114,712	472,969	419,694	489,431	378,016	569,183	428,075

Rates of Exchange and Freight 1885 and 1886 (referred to in para. 70 of the Report).

Week ending	Exchange. On England, Bank Bills (Sight). 1885.	Exchange. On England, Bank Bills (Sight). 1886.	Freight, Liverpool. 1885.	Freight, Liverpool. 1886.
	S. d.	S. d.	£. s. d.	£. s. d.
7th January	1 7¼	1 5¾	1 2 6	0 13 9
14th do.	1 7 5/16	1 5 7/8	1 2 6	0 15 0
21st do.	1 7⅛	1 5 15/16	1 3 9	0 12 6
28th do.	1 7	1 6	1 3 9	0 12 6
4th February ...	1 7⅛	1 5 27/32	1 2 6	0 12 6 to 0 13 9
11th do.	1 7	1 5⅛	1 5 0	0 11 3 to 0 12 6
18th do.	1 6 15/16	1 6 1/32	1 5 0	0 13 9
26th do.	1 6 27/32	1 6	1 3 9	0 15 0
4th March	1 6⅞	1 5 31/32	1 3 9	0 15 0
11th do.	1 6 29/32	1 5 31/32	1 2 6 to 1 3 9	0 15 0
18th do.	1 6 31/32	1 5 31/32	1 3 9	1 1 3
25th do.	1 6 29/32	1 5 15/16	1 3 9	0 18 9
1st April	1 6⅞	1 5 15/16	1 3 9	0 17 6 to 0 18 9
8th do.	1 6 15/16	1 5⅞	1 3 9 to 1 5 0	0 17 6 to 0 18 9
15th do.	1 7	1 5¾	1 3 9	0 16 3 to 0 17 6
22nd do.	1 7 3/32	1 5 25/32	1 3 9 to 1 5 0	0 16 3
29th do.	1 7⅜	1 5 25/32	1 6 3	0 16 3 to 0 17 6
6th May	1 7 5/16	1 5 19/32	1 3 9 to 1 5 0	0 17 6
13th do.	1 7 3/16	1 5 13/32	1 3 9 to 1 5 0	0 18 9
20th do.	1 6⅞	1 5¼	1 5 0	.....

Week ending	Exchange. On England, Bank Bill. (Sight). 1885.	Exchange. On England, Bank Bill. (Sight). 1886.	Freight, Liverpool. 1885.	Freight, Liverpool. 1886.
	S. d.	S. d.	£ s. d.	£ s. d.
25th May	1 7	1 5 7/16	1 2 6	0 18 9
31st do.	1 6 29/32	1 5 9/32	1 3 9 to 1 5 0	0 18 9
7th June	1 6 15/16	1 5⅜	1 0 0	0 18 9
14th do.	1 6 29/32	1 5 7/16	0 18 9	0 18 9
21st do.	1 6 29/32	1 5⅜	0 17 6	0 17 6
28th do.	1 6 15/16	1 5⅜	0 17 6	0 16 3
6th July	1 6 31/32	1 5⅛	0 17 6 to 0 18 9	0 15 0 to 0 16 3
12th do.	1 6¾	1 4 29/32	0 17 6	0 15 0
19th do.	1-6 29/32 to 1-6¾	1 4 27/32	0 16 3	0 15 0
26th do.	1 6 25/32	1 4 15/16	0 16 3	0 16 3
2nd August	1 6 15/16	1 4 1/16	0 16 3	0 17 6
9th do.	1 6 27/32	1 4 3/16	0 17 6 to 0 18 9	0 17 6
16th do.	1 6 25/32	1 4 7/32	0 17 6 to 0 18 9	1 0 0
24th do.	1 6 9/16	1 4 5/16	0 16 3	1 0 0
30th do.	1 6 9/16	1 4 11/32	0 16 3 to 0 17 6	1 0 0
6th September ...	1 6 5/16	1 4 19/32	0 16 3 to 0 17 6	1 0 0
13th do.	1 6 3/16	1 4 19/32	0 15 0	1 2 6
24th do.	1 6¼	1 4 31/32	0 17 6 to 0 18 9	1 2 6
30th do.	1 6 7/32	1 5 7/32	0 18 9 to 1 0 0	0 17 6
8th October... ...	1 6 5/32	1 5 3/16	1 0 0 to 1 1 3	0 17 6
14th do.	1 6 3/16	1 5 13/32	1 1 3	0 16 3